

Profit on Highway Job Depends on Borrow Pit Choice...Page 85

AUGUST, 1961

PRICE \$1.00

Construction Methods AND EQUIPMENT

A M c G R A W - H I L L P U B L I C A T I O N

*One Batch Plant Site
Must Service
15-Mile Road Job...96*

*Epoxy Glues pontoons
Together to Form
A Floating Bridge...92*

COMPLETE CONTENTS, PAGE 4



*In Illinois a 34E paver places a 2 1/2-in.
lift of colored concrete on an access road
to U.S. 66 as part of a modernization program
to bring the route up to Interstate standards.*

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FABULOUS 40
comes another
answer to the right
machine for your work



dig, swing, dump...swing and move up...dig, swing, dump... smooth...non-stop with the 1 $\frac{1}{4}$ yd. P&H hoe

\$10,500 worth of bonus extras as standard equipment speed up the complete work cycle

By the hour, by the day, and by the job, the 1 $\frac{1}{4}$ yard P&H hoe goes through the complete work cycle faster than any machine in its class. Much of this speed is due to one P&H bonus extra worth a minimum of \$3,500 . . . exclusive Magnetorque swing. It makes swings faster, smoother . . . you can crowd the side of the trench all you want . . . there is no trouble, no adjustments. You can't get Magnetorque swingers on any other make of machine. If you could, it would cost you at least \$3,500 extra!

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Milwaukee 46, Wisconsin



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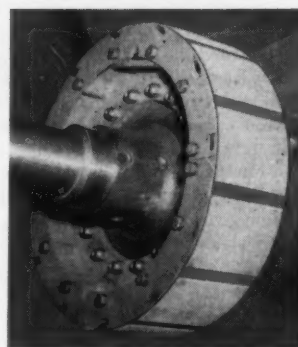


This Michigan Tractor Shovel operates on hillsides and 30° slopes ...get stopping power with Hi-Torque brakes

Working on a Springfield, Mass., reservoir job, the Fruin-Colnon Contracting Company and C & C Construction Co. use this 6 yard Tractor Shovel for clearing, stripping, excavating, lugging 16-ton pipe sections, backfilling, and other work. The contractor reports: "These operations call for good brakes which this machine has ... BFG Hi-Torques are tops!"

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For information check your vehicle manufacturer, or write *B.F. Goodrich Aerospace and Defense Products*, a division of *The B.F. Goodrich Company*, Dept. CM-8, Troy, Ohio.



Hi-Torque brakes give *full-circle contact* around the drum for maximum stopping power. Brakes can be operated by air-over-hydraulic, direct-hydraulic, or direct-high pressure air actuation.



Hi-Torque brakes

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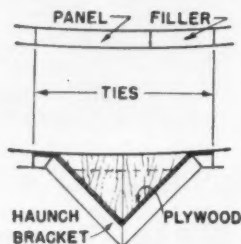
Special Brackets



Symons special haunch brackets re-used 4 times at a cost far below job-built brackets

How to form a series of four 80 ft diameter sludge digester tanks was the big problem on this job. Calumet Construction Company, Hammond, Indiana, solved it by using Symons Steel-Ply Forms and 3 sizes of special haunch brackets.

The tanks were poured in two lifts—10'6" high, 22" thick—and 14'6" high, 14" thick. Haunches were required on both lifts as well as on the top of the wall. Symons regular haunch brackets



Plan view of special haunch brackets
used horizontally on first lift.

were modified to comply with the job requirements. Result: 22 brackets were re-used four times at a price far below what it would have cost to job-build each bracket.

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ON THE COVER

To aid motorists getting off a highway near Wilmington, Ill., that is being upgraded to Interstate standards, specs call for Eric Bolander Construction Co. of Libertyville to lay a 2½-in. top lift of red concrete on access strips. Color comes from adding 3 lb of red iron oxide per bag of cement as the Rex paver is charged. The 20-ft Clarey screed (foreground) has three revolving drums, one of which vibrates. The 10-in.-thick concrete slab is reinforced with 6x12-00/4 welded wire fabric.

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NEXT MONTH

The maintenance operation of a road-builder on a Michigan highway job is self-sufficient, thanks to a mobile shop equipped with tools to make shafts, bushings, and other parts that the contractor might need in a hurry. In addition, the trailer houses equipment that is used for trouble-shooting and repairing components. The contractor also modified a prefab shop building by mounting roof panels on wood frames to speed erection and disassembly of a shop in the field.

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AUGUST, 1961

Pay Dirt in This Issue

Truck-Mounted Mixers

Mobilize Concrete Pours . . 82

Eight portable packages consisting of turbine mixers mounted on flat-bed trucks that pull conveyors are making concrete pours at 150 missile silos spread over a 20,000-sq.-mi area.



Scrapers Haul Surcharge

To Displace Deep Muck . . 90

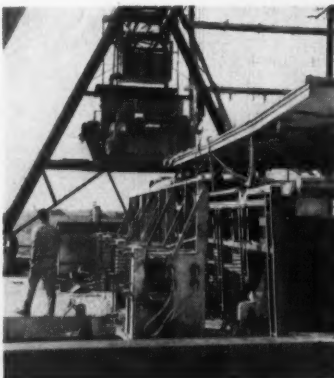
The contractor cuts a trench across a road site, then squeezes muck into it by rolling a sand surcharge placed by scrapers. Draglines remove the muck from ahead of the surcharge.



Contractor's Yard Turns

Out Causeway Sections . . 128

Prestressed bridge girders, decks, curbs, and sidewalks are cast monolithically for a 2½-mi Texas causeway. A special crane places two of the 150-ton deck sections in a day.



Borrow Pit Choice Determines Road Job Profit 85

How to Build a Floating Construction Bridge 88

Epoxy Glues Pontoons Together to Make a Bridge 92

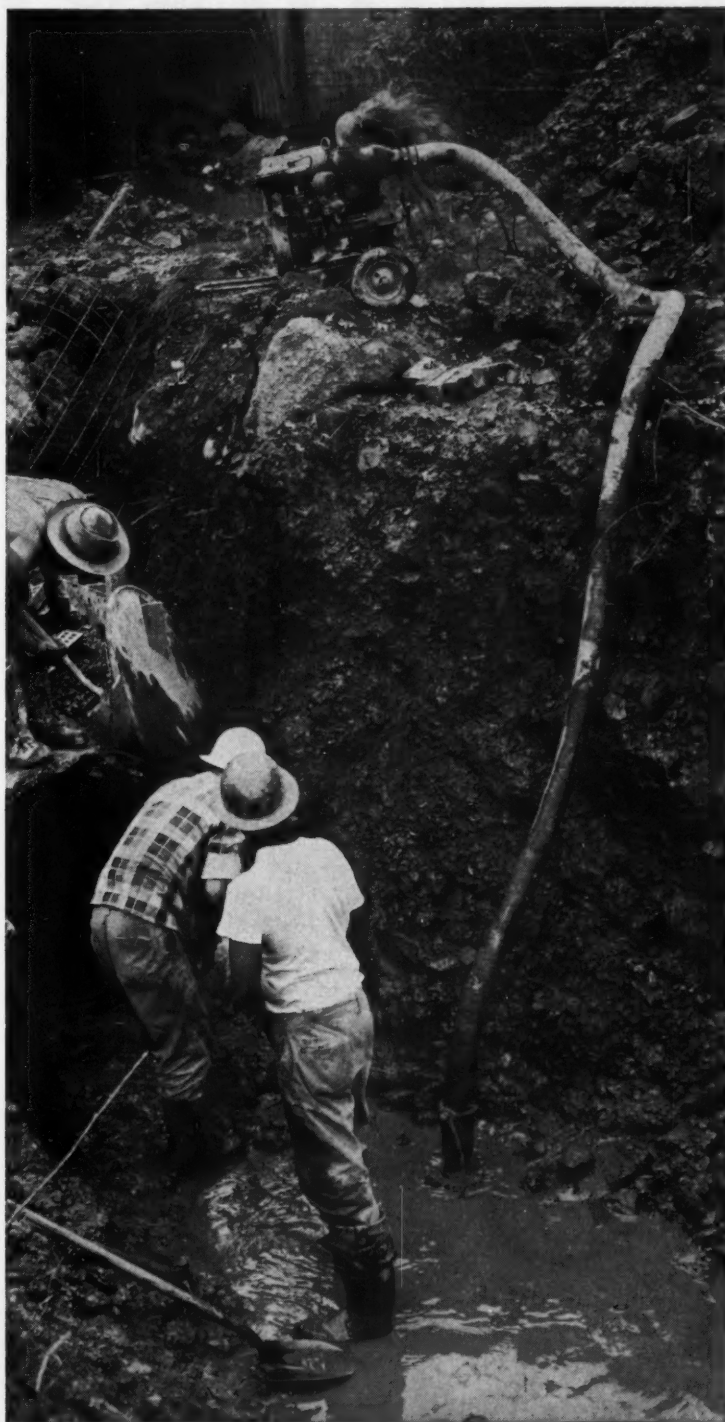
One Batch Plant Site Services 15-Mi Road Job 96

Converted Army Rig Carries Piles Across Swamp 102

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Special Rigs Overcome Tough Caisson Problems 124

HANDLE THE TOUGHEST PUMPING JOBS WITH EASE!

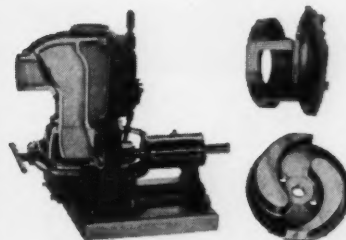


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Completion dates . . . equipment failure . . . bad weather . . . water problems . . . headaches that harass as you push to get the job done. You just can't afford to have trouble.

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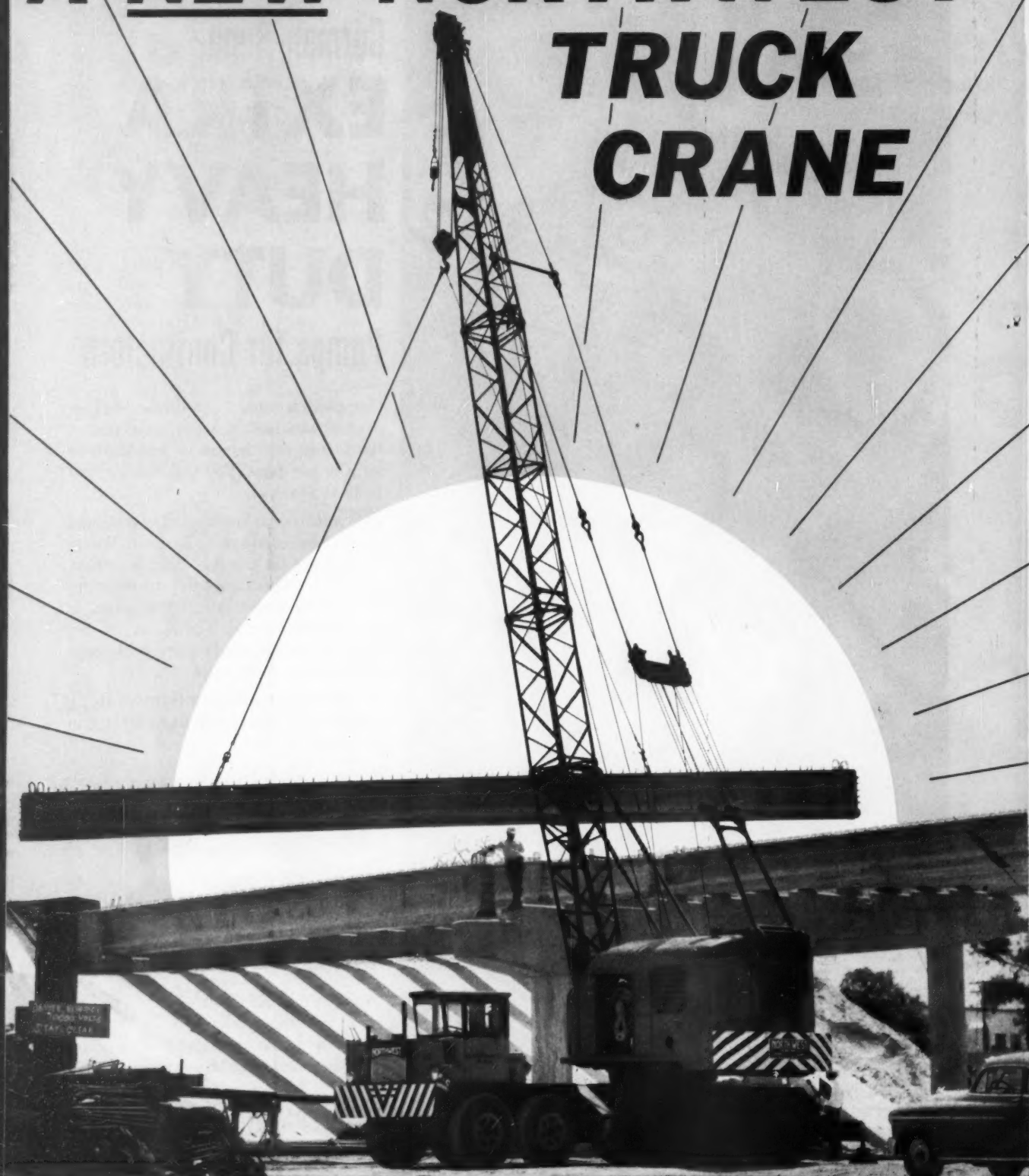
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UNPOSED PHOTOGRAPHS OF NORTHWESTS DOING JOBS

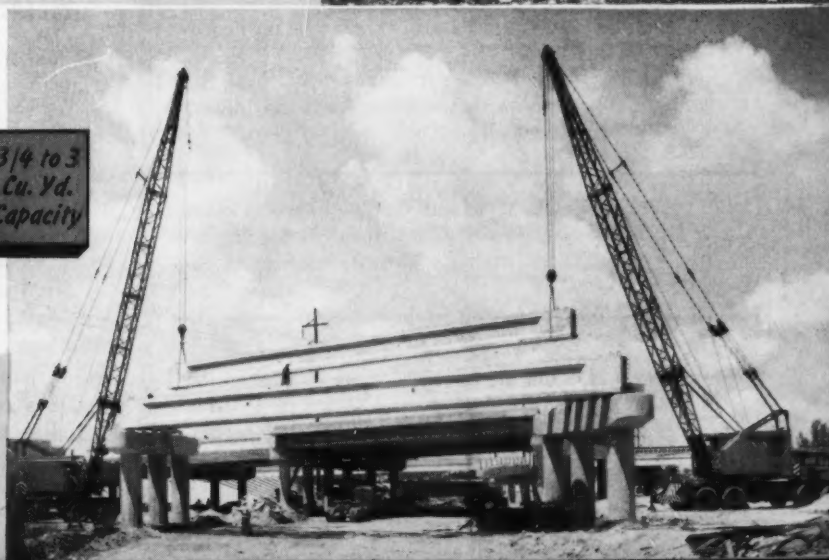
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FIELD



LUBE LOGIC

New tips for

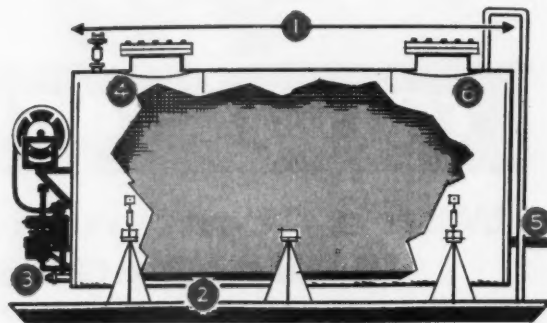
Don't let storage tank contaminate gasoline

One of the basic essentials of good equipment performance is clean fuel; and the best way to make sure the fuel you use is as clean as the fuel you buy is to keep your own storage facilities up to snuff.

What does it take to make the ideal gasoline storage tank? Here are some of the specifics that Texaco engineers have found to be most important.

The ideal gasoline storage tank has:

1. Plenty of room. Every time you fill a tank you stir up the sediment at the bottom. The bigger the tank, the less it has to be refilled, and the longer the sediment stays settled on the bottom.
2. Welded construction.
3. A 1½" drain valve, located at the lowest point.



4. A large hand hole plate or manhole, to make cleaning easier.
5. A suction line to the gasoline pump located several inches above the tank bottom, to avoid drawing out the sediment and condensate.
6. A fine-mesh strainer over the filler opening.

Four tips to keep hydraulic oil clean in storage and handling

Even the best maintenance techniques won't keep your hydraulic equipment on the move if you don't keep the oil clean while it's in storage and while it's being put into the machine. Here are four simple precautions that will assure you of getting nothing but clean, clear oil in the hydraulic system:



1. Store the drums on their sides, indoors if possible, but in any event under some sort of shelter.



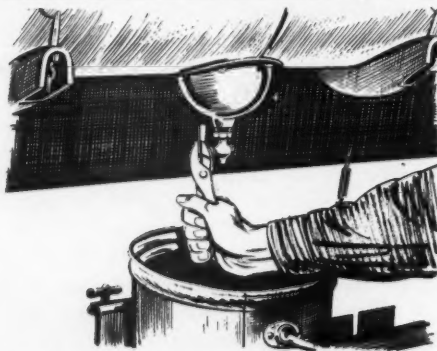
2. Before you open a drum, clean the top so that no dirt or water can fall into the oil.



3. Make sure that you use only *clean* hose and containers in transferring the oil from the drum to the equipment.



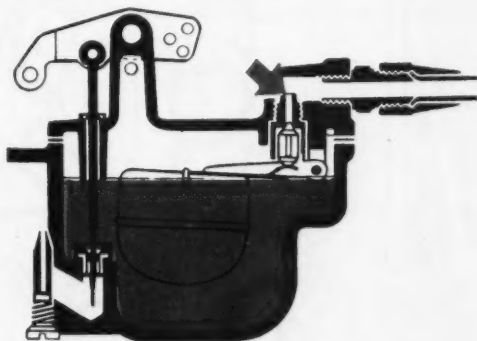
4. Filter the oil as it enters the reservoir on the machine. If the fill pipe on the equipment doesn't have a filter, use a funnel fitted with a 200-mesh screen.



Protect diesel fuel injector with periodic tank drains

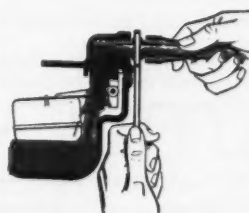
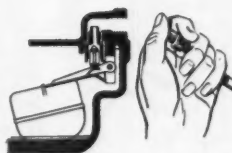
Dirt and water in diesel fuel can ruin a fuel injector in no time. Even if you keep the fuel clean during storage, there's still a good chance that temperature changes will create enough condensation in the fuel tank on your rig to start rusting in the injectors. Several operators have pretty well solved this problem by partially draining the fuel tank once or twice a week. Simply draw off about a gallon of fluid through the drain valve at the bottom of the fuel tank. You lose some fuel this way, but you also get the accumulated water and other contaminants clear out of the fuel system. The cost of the fuel you drain off is a small loss compared to the repair bills you save on the fuel injectors.

more efficient maintenance

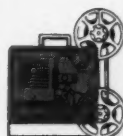


Quick cure for carburetor flooding

Repeated stalling and hard restarting is often caused by a tiny particle of grit, which lodges under the carburetor float needle valve, lets too much gasoline into the carburetor and causes flooding. You can often solve the problem with the following routine: disconnect the fuel line at the carburetor and plug it with a cork, a pencil or anything else that will fit. Then run the engine until you've used up all the fuel in the carburetor. Reconnect the fuel line, crank the engine, and the rush of gasoline into the empty carburetor will often flush the foreign matter out of the needle valve seat. If you have a friend but no cork, have the friend start the engine while you plug the disconnected line with your thumb. Same difference.



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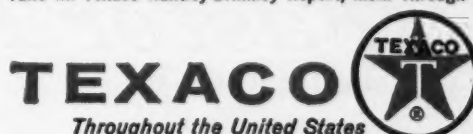
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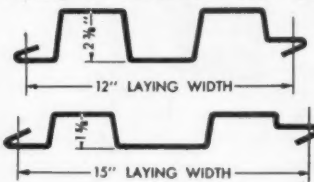
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Construction News From Washington

Washington D.C.
August, 1961

Missile Site Ruling Will Set Pattern

A government ruling due this month is expected to set a pattern for handling union jurisdictional disputes at missile base construction sites.

The dispute in question, between the International Brotherhood of Electrical Workers and the Operating Engineers, concerns an assignment for laying cable at Walker Air Force Base in New Mexico. But it also will have an effect at other sites and on other jobs.

Secretary of Labor Arthur Goldberg, who heads up the new Missile Sites Labor Commission, asked for and received reports from a special panel on the case.

Julius E. Kuczma, executive secretary of the commission, noted that whatever decision is made in the IBEW-Operating Engineers case, "it will concern only the missile sites, without prejudice to parties in their jurisdictional disputes elsewhere."

The recommendations to Goldberg are coming from John Dunlop, head of the Construction Industry Joint Conference; C. J. Haggerty, president of the AFL-CIO Building Trades Dept., and James D. Marshall, executive director of the Associated General Contractors. They form one of several missile site committees that were set up earlier this month. The committees include officials of contracting agencies, building trades unions, industrial unions, contractors, and missile manufacturers.

Their main task is to forestall labor troubles by keeping a close check on labor-management practices on missile base jobs. When a dispute does break out, the missile commission is authorized to name a special panel, at the site, to take up each case.

Congress Approves Funds for Sewage Plants

An expanded program of water pollution control, including new federal authority to enforce anti-pollution measures, has been approved by Congress. Chief change, other than extra funds, permits federal intervention to prevent pollution of intrastate waters—if the governor of the state involved requests such action.

Sponsor of the expanded program was Rep. John A. Blatnik (D-Minn.), who had the wholehearted support of the Kennedy Administration. Funds available to communities for building sewage treatment plants are \$80 million in the current fiscal year, \$90 million in fiscal 1963, and \$100 million in each of the subsequent years. Under the new program, federal funds available to an individual community for a single project are increased from a limit of \$250,000 to \$600,000.

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Construction jobs are rough on generators . . . but not as tough as Onan's own tests. That's why Onan plants mean reduced downtime and maintenance. Over-sized bearings, Stellite valves, shorter, stronger crankshafts and connecting rods keep Onan on the job when others can't take it. Put an Onan on the job along-side the plants you're now using. Your own records will prove Onan best.



Stellite coated exhaust valves and valve seats. One of toughest alloys known. Gives you up to 300% longer valve life than uncoated valves. It's the important details like this that make Onan more economical in the long run.

Exact standards govern manufacture—years of specialized experience and extensive testing facilities control the quality of Onan Power Plants. Over 1000 different types and sizes of plants are produced by Onan.



use...even abuse

Onan electric plant still delivers full power after 12,197 hour test—equal to 487,888 miles

A grueling endurance test that lasted one year, nine months and 12 days could not stop Onan test plant #1068. Onan engineers used this production-built unit for an endurance run—and after it was all over, it still generated the full rated power promised on the nameplate. Proof that Onan's exacting standards and production testing give you a power plant with long, dependable life built in.

Over 1,700 other endurance units have been run by Onan engineers. In these tests every design feature and part has to prove itself before it can become a part of the Onan you buy. In addition, every type and size Onan plant is tested under all operating conditions which

could conceivably affect performance on your job.

Hours of running in and testing under full load are given *every* Onan before it is shipped. An independent testing laboratory then spot tests Onan Plants that have already been tested by Onan—double assurance that every Onan will deliver its full nameplate rating. Only then does an Onan production run qualify for Performance Certification.

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*Here's a new idea in trenching—
and how one contractor
who tried it—*

cut equipment needs $\frac{1}{2}$

Application of rubber-tired Tractor Shovels to work normally done by back-hoes, bulldozers and cranes has resulted in very substantial savings for Peter W. Kero Inc, Carlstadt, New Jersey.

Laying extensive sewer lines in Paramus, N. J., Kero's fleet of 12 Michigans is back-filling all 40 miles of main sewer line... digging the 4,000 (yes, 4,000!) connecting lines... and, as Project Supt Wayne Smith points out, "making enough free time for themselves to load trucks and handle utility jobs throughout the \$2½ million project."

Michigans dig and quickly backfill trenches

The *biggest advantage* of the Michigans, however, according to both Supt Smith and Owner Peter Kero, is "their efficient handling of both excavation and backfilling on the connecting lines."

"Each of our six hoe-equipped Michigans," Mr. Kero says, "saves us the cost

of the usual two-machine (back-hoe and dozer) operation." Typical per-Michigan production is *six* connecting lines excavated and laid per 8-hour day. Lines average 17 feet long, 6 to 12 feet deep. "The Michigans *could* dig more," says Owner Kero, "but some lines have been put through rock and hardpan... many others, dug in sand, have had to be shored... and every hole to date has had to be pumped out. Each Michigan also handles its own backfilling and wherever necessary, transports or truckloads excess dirt." One of this hoe-equipped fleet is a 1¼ yd Model 75A; the other five, 1 yd Model 55A's.

Haul pipe and supplies

Three other Michigans—also 1 yd Model 55A's—backfill main lines (which are as much as 30 feet deep)... truckload aggregates... and haul 6 to 30 inch pipe and other supplies around the job.

Pull sheeting

Several of Kero's Michigans have also been fitted with shop-made, bucket-mounted bar-and-hook arrangements—each of which saves assigning a crane "or many man-hours" to pull sheeting from completed trenches.

Replace both grader drop-blade and loader

Another unusual idea which Mr. Kero says has helped reduce equipment needs is the use of home-made drop-blades to re-dig main-line trench routes for permanent paving. After backfilling has settled, these 2, 3 and 5 ft wide blades are bolted to a Michigan bucket, and the bucket lowered so existing pavement acts as depth guide. As Tractor Shovel drives forward, cut is made "automatically" to required depth (usually 9 inches). No separate loader is needed... dirt flows right into Michigan bucket for wasting or truck-loading.

"The big advantage of Michigan Tractor Shovels," says Owner Peter W. Kero, "is their ability to handle both excavation and backfilling on a production basis."





Excellent performance of his first Michigan Tractor Shovel, plus experience of 20 years with Michigan Cranes, triggered Kero's purchase of his present fleet of 12 Michigans.

Truck-load 16 yds in 2 minutes

To gain as much bucket capacity as possible, Kero uses one or more of his three 2¾ yd Model 175A Michigans on this job. Other times, these big Tractor Shovels truck-load excess dirt . . . heaping a 16 yd hauler in 5 or 6 passes, 2 to 3 minutes. And, of course, they help back-fill the deep main-line trenches and even carry pickup-truck-sized loads of supplies.

Operators praise the maneuverability

of all the Michigans. "They shift easily and steer fast," they say. "And they turn in a very short radius. This is especially important in busy residential areas where there's not too much room to move around."

No matter how much digging *you* have to do—or what it is, trenches, footings, basements—versatile, mobile Michigans probably can save you time and equipment investment, too. Nine basic

models, 37 bucket choices (up to 12 cubic yards) are now available. See your Michigan Distributor for details.

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division



2403 Pipestone Road
Benton Harbor 39, Michigan
In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

Kero's three 2¾ yd Model 175A Michigans both backfill main-line trenches and truck-load excess material. Four passes, 1½ minutes, will load this 12 yd hauler.

Backhoe-equipped Michigans can be switched quickly from trenching to other jobs. Operator, working alone, can "drop off" (or remount) Snap-Mount Hoe in one minute!





When his fleet of four crawler dozers failed to maintain production behind eight draglines, this prominent sewer contractor tried a rubber-tired unit. Today:

One Michigan does

The one Michigan Model 280 Tractor Dozer you see here is, *by itself*, handling all backfilling behind *eight* sewer-digging draglines. It has released *four* crawler dozers for other work, eliminated the need for a lowboy truck, and sidelined a compactor formerly used on the trenchfill.

The job is a \$2,000,000 network of sewer and water lines for the City of Bloomington, Minnesota. The contractor: Lametti & Sons, Inc., St. Paul.

"When we first tried the Michigan" recalls Bob Larson, veteran superintendent for Lametti, "both we and our Michigan distributor, Road Machinery & Supplies Co., Minneapolis, expected the 262 hp machine to produce only

about as much as *one* of our 235 hp crawlers. But, particularly because the Michigan is so much faster on the return portion of each dozing cycle, it has *outproduced two of them*. And with its ability to travel quickly under its own power between locations it has had no trouble keeping *all backfilling cleaned up behind eight draglines!*"

Travels 35 miles daily between jobs

Because of the wide area over which the draglines work—about four miles square—the 28 mph Michigan travels up to 35 miles daily between job locations... spends an average 20 minutes at each site dozing the 2700 lb-yd sand

material up to 200 ft.

To do this job originally, two crawlers—both 235 hp—had to be lowboy-transported from location to location, and two smaller crawlers—70 and 100 hp—had to be kept at one station each. The big trouble was that the lowboy never seemed to be in the right spot at the right time. The big crawlers spent half their time waiting. The Michigan, of course, doesn't have to wait for transportation, and it has kept production high continually.

Gets 100% compaction on normal dozing passes

There have been other benefits too! One is compaction. *In just normal dozing*

Where sand has to be dozed 200 ft into trenches, Michigan's fast push and fast return enable it to out-produce two similar-sized crawlers.



Low-pressure tires and excellent maneuverability keep lawn damage to a minimum.

In this abrasive sand, Lametti estimates tires will outlast tracks, six to one!

A big advantage of Michigan over crawlers is its ability to make fast self-powered moves between trenching locations.



work of 6 machines

operation, the 57,770 lb Tractor Dozer has compacted the fill to original density.

"When we used crawlers to backfill, we either had to load out about 10% of the material or use a vibratory compactor," Mr. Larson points out. "And with the compactor we were always worrying about a broken sewer line . . . something we don't fear from the Michigan's big (29.5-25) tires."

The speedy Michigan has also proved handy for such odd jobs as moving manhole covers . . . pulling out stuck draglines . . . and by chaining backhoe and bucket attachments to its blade, providing the transportation services formerly done by truck and lowboy.

Still more tasks are soon to be added

to the busy Michigan's schedule . . . among them, scarifying asphalt streets to make digging easier for draglines, and with an angle-blade side-casting fill over water line trenches.

Residents like quick work, contractors like 100% availability

"Michigan ability to keep backfilling cleaned up puts us in good with the local residents," adds Mr. Larson. "It works so fast we're in and out in one day and no driveways are blocked at night. Also, compaction by the Michigan makes it easy for traffic to move over the trenchfill even in rainy weather. Then too, in these narrow streets we

occasionally have to drive on someone's lawn and we find the Michigan's tires don't tear them up as do crawlers."

He continues, "Another reason we're pleased with the Michigan is excellent availability it's given us from the beginning. It's a great machine for our kind of work; we sure wouldn't like to be without it!"

Michigan is a registered trademark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division

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Benton Harbor 14, Michigan
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St. Thomas, Ontario

Crush more tons per dollar . . .

BUY REPLACEMENT PARTS FROM THE COMPANY THAT BUILT YOUR CRUSHER

You buy a crusher because of the engineering experience the manufacturer has put into it to give you more production for your money. In the same way, the manufacturer of your crusher buys the experience and engineering abilities of the company which supplies certain components and replacement parts for it. The manufacturer profits only when *you* are satisfied with the performance of his product. That's why most big-name crushing equipment manufacturers work closely with AMSCO to give you replacement parts that fit perfectly, assure original equipment performance, and last a long time in the toughest conditions.

When it comes to wear parts, here's why most manufacturers insist on AMSCO. As long-experienced specialists in wear-resistant metals, AMSCO *engineers* alloys to exact formula needed to stand up under the abrasion-impact-pressure crushing conditions of your job. AMSCO cast parts are structurally perfect and contain the proper alloys for longest possible life.

AMSCO parts are patterned from manufacturer's drawings. They are built for *your* crusher . . . not copied from inaccurate field measurements. When you need mantles, concaves, jaws, rolls, plates or liners, get them from the manufacturer who built your crusher. He depends on AMSCO's experienced way with wear-resistant alloys *to help you crush more tons per dollar.*

They're backed by experience...

AMSCO

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILLINOIS

AMERICAN

Brake Shoe

COMPANY

Other Plants in:

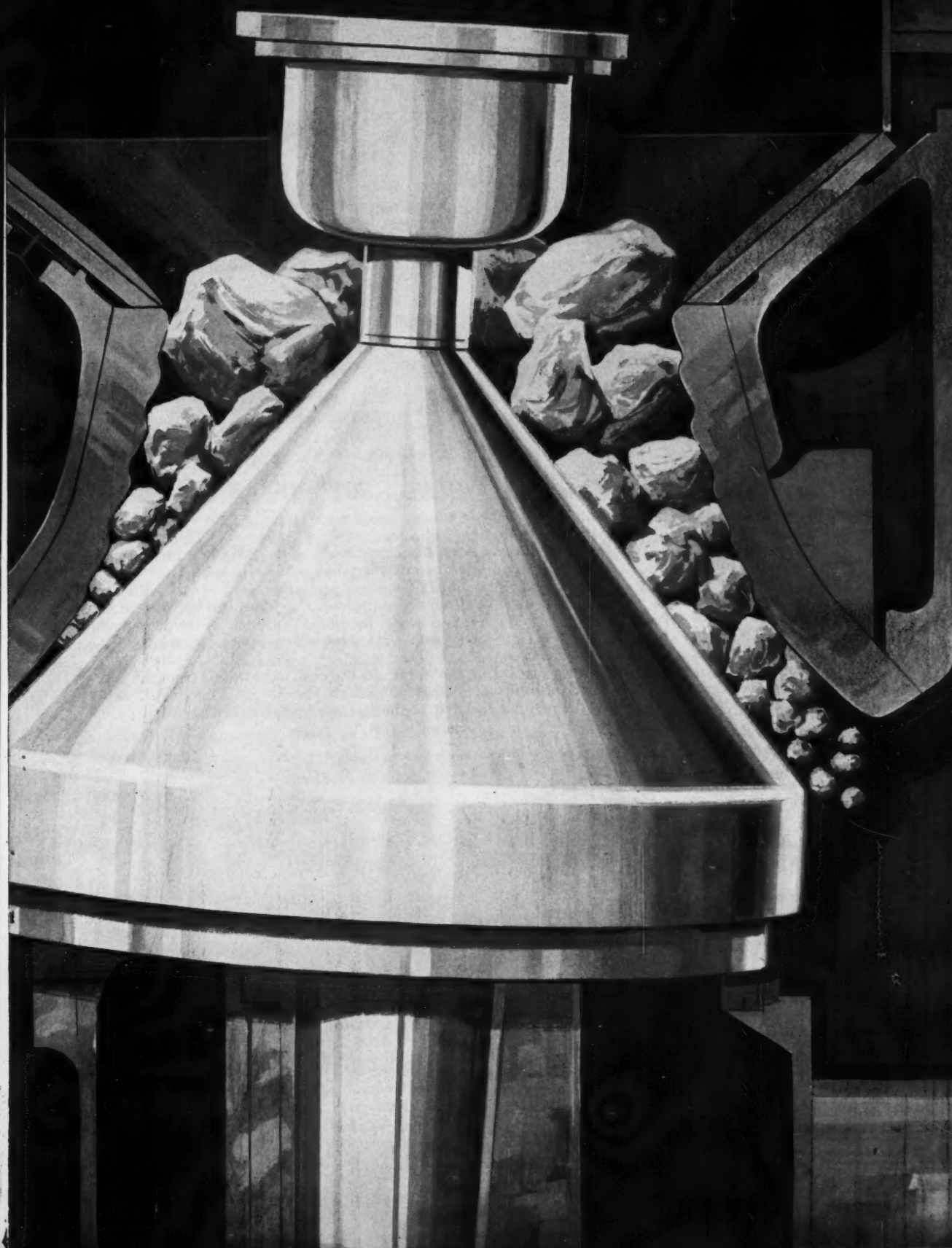
Denver • Los Angeles • New Castle, Del. • Oakland, California • St. Louis

IN CANADA: Joliette Steel and Manitoba Steel Foundry Divisions

IN MEXICO: Amsco Mexicana, S. A.

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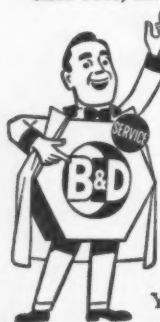




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tools. Black & Decker maintains 50 factory service branches plus authorized service stations to give your B&D tools the attention mechanical products need periodically. Keep your B&D tools in top condition, on the job all the time.

Only factory parts and factory-approved methods are used. Fast service and reasonable cost, always.



SWIFTY SERVICE says
 be sure to ask about:

FREE TOOL INSPECTION
 no cost,
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**STANDARD B&D
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 Dept. 2208-S, Towson 4, Md.



Black & Decker

Quality Tool Service

Circle 20 on Reader Service Card

Job Talk...



Job-Built Elevator Cages Replace Scaffolding

A California contractor uses inexpensive, light weight elevator cages instead of scaffolding while renovating a Sacramento hotel. The job calls for jackhammering through the concrete wall (6 to 14 in. thick) of the hotel to place air conditioners below the window sills.

Richwood Builders made the cage themselves, sheathing a light steel frame with 3/4-in. exterior type plywood. A winch on the roof of the hotel raises and lowers each cage by means of cables. A tie-back frame made up of two wood posts and a steel pipe cross-piece set inside the window anchors the cage to the wall.

Besides supporting the workman, the cage traps debris from the jackhammering and safeguards pedestrians below. Richwood claims the cages helped cut the cost of the job considerably.



Radio Coordinates Loading Operations

Howard Quarries of Sedalia, Mo., mounts a two-way radio on their Caterpillar 944 Traxcavator for ready communication between dispatch office and loading pit. The General Electric radio is buttoned to a fender of the rig with wing bolts so it can be dismantled in the evening and locked in a tool box. Howard finds the radio permits changes in the loading operation at a moment's notice.

continued on page 28

CONSTRUCTION METHODS



2 B&D Magnetic Drill Presses drill 1 hole every 29 seconds for 14 days!

Without letup (or breakdown), making over 42,300 holes $\frac{15}{16}$ " diameter in heavy steel plates . . . two Black & Decker Magnetic Drill Presses ($\frac{3}{4}$ " and $1\frac{1}{4}$ " sizes) drilled around-the-clock for 14 days to meet an extraordinary deadline. The job resulted from a special rush order given Southern Reinforcing Steel Company for prestressed concrete requiring 2 large jigs. The need was for a tool with drill press accuracy, portable drill versatility and time-proved

durability. That's why the choice was the Black & Decker Magnetic Drill Press.

Over 1,500 pounds of magnetic power hold this drill in position . . . up, down or sideways. Famous B&D power makes any job quicker and easier. The Black & Decker Magnetic Drill Press is sold by leading distributors everywhere. *For sales and service, look in the Yellow Pages under*



Remote Hydra-Power Feed is available on all three B&D Magnetic Drill Presses. You just stand aside and let these tools do the work — upside down, right-side up or sideways.

Single-speed $\frac{3}{4}$ " and $1\frac{1}{4}$ " sizes, and two-speed $1\frac{1}{4}$ " model give you a three-way choice of B&D Magnetic Drill Presses. All operate manually or by remote control.



Black & Decker®

CUTS MAN-HOURS TO MINUTES

THE BLACK & DECKER MFG. CO., Dept. 2208
Towson 4, Md. (In Canada: Brockville, Ont.)

☐ Please arrange a demonstration of.....
☐ Please send additional information on.....

Name..... Title.....

Company.....

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City..... Zone..... State.....



☐ Impact Wrenches



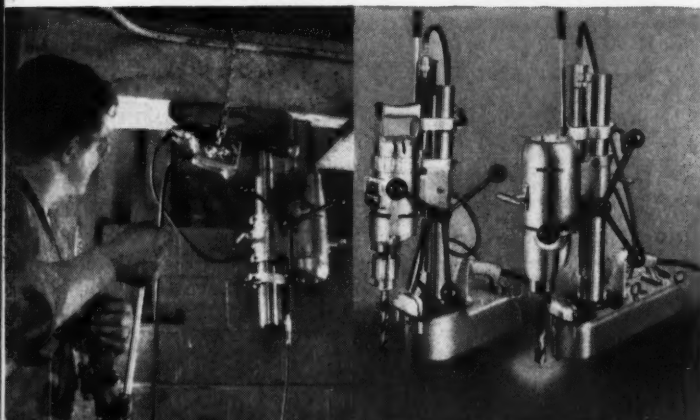
☐ Hammers

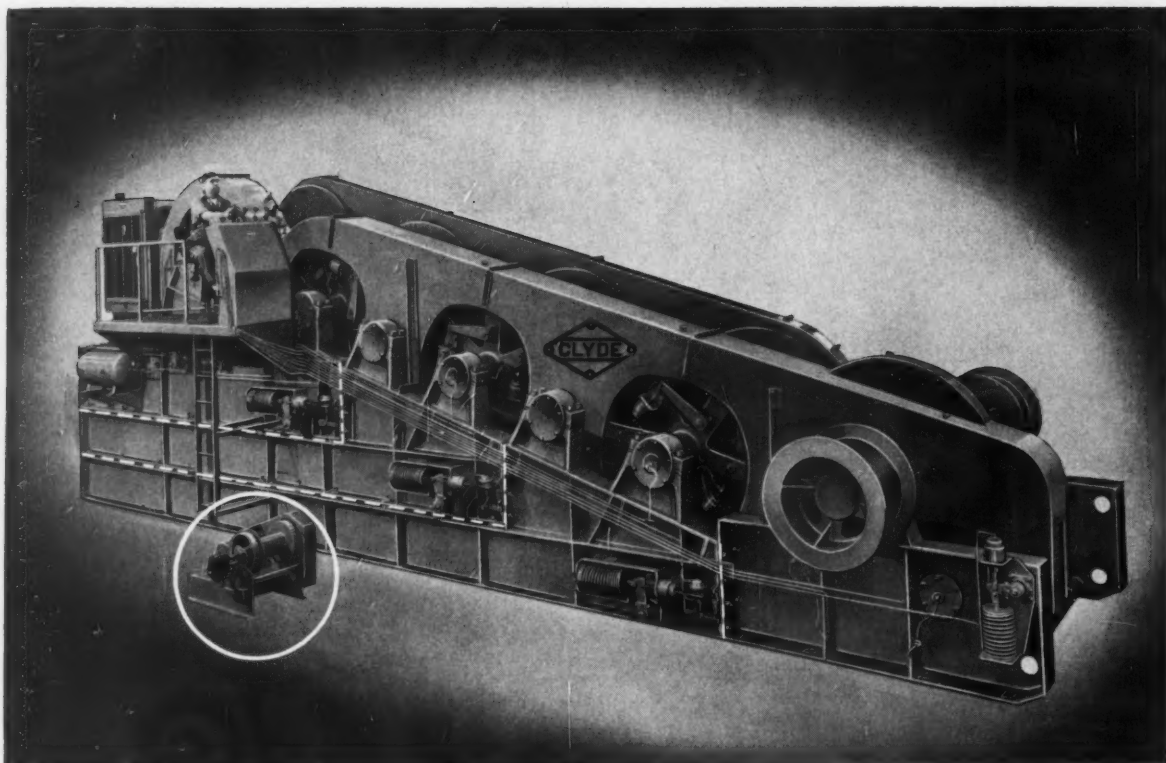


☐ Belt Sanders



☐ Drills





Which one of these two Clyde Quality Hoists is Portable?*

The operator of the Clyde Frame-12, 4-Drum Erectors Hoist is 'master of all he surveys!' Gentle, but responsive, controls at his fingertips safely handle the 42,000 pound line pull. Even on the 10th layer or with 3,000 feet of cable on the drum this unit has a 30,000 pound line pull and a 25,000 pound pull at 36 feet per minute on the 2-drum bull wheel swinger.

It was designed and built for Harris Structural Steel Company, Inc. of New York City, for use on the Brooklyn-Narrows bridge.

The hoist is sectionalized so that it can be used as a 2-, 3-, or 4-drum unit. Height and width both exceed 12 feet and it is almost as long as

a city lot is wide . . . 39 feet 3 3/4 inches! Total weight is slightly more than 61 tons!!

***BOTH OF THEM!** Though dramatically different in size, the two Clyde Hoists shown in the illustration above are both portable.

The Frame-12 Hoist is thought to be the largest portable construction hoist in the world. Portability is not the only common denominator of the two hoists shown. Both proudly carry the Clyde trademark, assurance and acceptance of the finest engineering, quality workmanship and rugged construction that have made Clyde hoists famous around the world. The smaller hoist? It's a Clyde Frame-3 Hoist with a 3,000 pound line pull . . . all muscle, all might . . . all Clyde!

Give a Lift to your project schedule with a Clyde Hoist

Write for Bulletin 34



Established 1899

CLYDE IRON WORKS, INC.

DULUTH 1, MINNESOTA

A SUBSIDIARY OF



HOISTS • DERRICKS • WHIRLEYS • BUILDERS TOWERS • UNLOADERS • CAR PULLERS •

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22

Circle 22 on Reader Service Card
CONSTRUCTION METHODS

Can your loader handle these six jobs?...



Grade with motor grader accuracy using the 4-in-1's "carry-type scraper" action—as this owner is doing, fine-grading a parking area to exact specifications. Operation "boils in" excess dirt, for easy removal.



Exclusive 4-in-1 clam action lets you grab, lift, and load heavy, unwieldy objects like stumps, boulders, and concrete slabs—without any need of hand work. You clam-on, lift, and release the load, hydraulically.



Simply open the clam, set "blade" segment to cut—and the 4-in-1 doubles for a full-sized dozer in capacity, working range, and control accuracy. Only "hand work" to do is move the hydraulic control lever.

SURE, if it's a Clam Action 4-in-1!



Clam-handle sticky materials with the 4-in-1—even in conditions that clog old-type buckets. Exclusive 4-in-1 bottom-dumping uses the gravity pull and clam "pull apart" action for positive self-cleanout!



Only clam-action 4-in-1's provide back-drag action—speeding masonry wall demolition here—also widely used for bank-grading, ditch-cleaning, and pulling down materials, quickly and efficiently.



Place the open clamshell over builder's scrap, rubble, isolated piles of loose materials—close the clam to fill the bucket, instantly, without "chasing" the material. And without any hand work, whatever!

Why limit the variety of jobs and conditions you can handle? Why limit your income to what an old-style "single-action" loader can earn you? Why be satisfied with anything less than 4-in-1 "equipment spread" utility—that multiplies profit-making capacity? Get positive proof! Let your International Drott Distributor demonstrate the 4-in-1 size you need! Five sizes available from $\frac{3}{4}$ to 3 cubic yards.



International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL®
DROTT

Payscraper® rigs speed road job in power-robbing Long Island sand!

—for Hendrickson Brothers, Inc., Valley Stream, N.Y.



Hendrickson Brothers, Inc., are prime contractors for 7.41 miles of Sunrise Highway extension, in Suffolk County, Long Island, New York. Much of the 2,100,000 cu. yd. to be moved is dead, "scraper fighting" sand. Hendrickson's count on six International 295 Payscraper rigs to help handle this contract profitably!

"The '295's' are doing a very good job in rough-to-handle Long Island sand," states Project Supt. Jerry Sposato. "Ample power, plus good maneuverability and flotation enable loaded '295's' to pull from the sand cut fast without pusher assistance."

Payscraper provides the advantage of up or down, on-the-go torque converter power-shifting—with load-speeding, automatic direct drive lock-ups in second, third and fourth gears. The 4-speed, planetary-type torque converter transmission automatically adjusts torque and speed to load.

Torque-cushioning planetary drive axles let the operator "gun" the DT-817 turbo-charged Diesel, and develop maximum rim-pull, fast.

And International design takes the hard

work out of scraper operation. "Two-finger" power-steering is by exclusive rack-and-pinion tandem pump system. 1,920 sq. in. of braking surface is controlled by quick-release valve for fast brake-and-go action. Exclusive International planetary cable bowl control provides operator "feel" and fast heat dissipation when pump-loading sand.

See for yourself how International 295 Payscraper "drive" takes the time-waste out of tough conditions—and lets your operators give you full capacity—full time. Let your International Construction Equipment Distributor demonstrate!



International Construction Equipment

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

Operating in deep, power-hogging

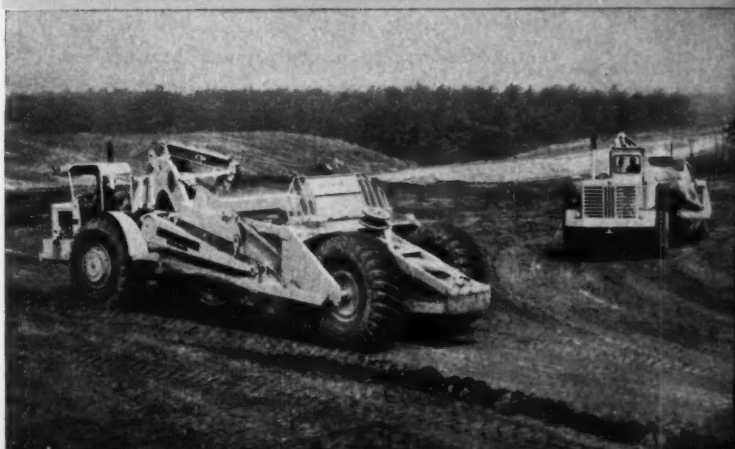
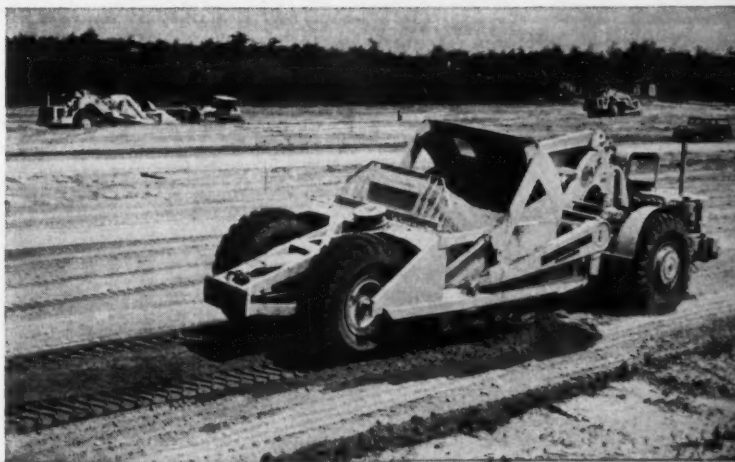
Long Island sand, this loaded 295 Payscraper is ready to power-shift up and haul out to the fill. Power-transfer differential helps beat the traction problem in loose sand.

Positive, Payscraper ejection is powered

by International "live" PTO-driven Cable Control Unit. You get dozer-like force for positive, steady ejection of hard-to-handle sand or any other scraper-moved material!

Complete, coordinated power control

of shifting, steering, braking, and bowl actions builds operator confidence—help you get full capacity and profit from Payscraper.





As the Dolomite Company knows so well . . .
hauling profits depend on the
RIGHT TRUCK ON EVERY JOB

Dolomite Products Co., Inc., Rochester, N. Y., avoids profit-squeezing hauling costs because it has the know-how and experience to analyze its truck needs with an eye to keeping costs under strict control. Loads, terrain, schedules, climate, speeds, etc., all must be carefully weighed in selecting trucks for best all-round performance. For twenty years, Dolomite has been developing the use of Mack trucks in a wide variety of assignments . . . keeping its large and diversified operation rolling smoothly, profitably.

From the big-capacity, double-bottom side-dumpers that handle 130,000 lb. gross in the quarry operations to the fast-stepping mixers

and B-30 Models that take care of jobs in the metropolitan area, each Mack in the fleet contributes to the over-all performance of the operation by giving maximum performance on the job it's designed to handle.

Macks deliver most profitable performance on every job because what goes into a Mack is **made by Mack**. Engines, clutches, transmissions, axles, drives and all other major components are **made by Mack** for Mack trucks alone . . . made to the highest standards of the industry to work together for maximum efficiency. This results in Balanced Design—Mack's way of making sure you always get unqualified satisfaction . . . of being sure that every Mack on your job

Circle 26 on Reader Service Card

Three big-capacity turbo charged Thermodyne® diesel powered Macks used alone or with full trailer haul over 4,300 tons of rock per shift from quarry face to crusher, consuming only 20 gallons of fuel per 9-hour day, with minimum downtime.



Crushed stone in large volume rolls to stockpile on Mack B-42T combinations. Manitou Construction Co., a division of Dolomite Products Co., Inc., also uses these vehicles for transport of bituminous concrete to paving jobs. Manitou also uses B-42 six-wheel dumpers to handle smaller hauling jobs.

Ready-mix concrete on its way from one of Dolomite's Rochester plants is handled by B-42 Model Macks. These mixers work in a metropolitan area where heavy traffic and stop-and-go driving can quickly wear down anything but a top-quality truck.

gives the best possible truck performance and maintains the longest prime of life.

Your Mack representative is qualified by knowledge and experience to help you determine the Mack model that will provide the most economical solution to your trucking problem. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

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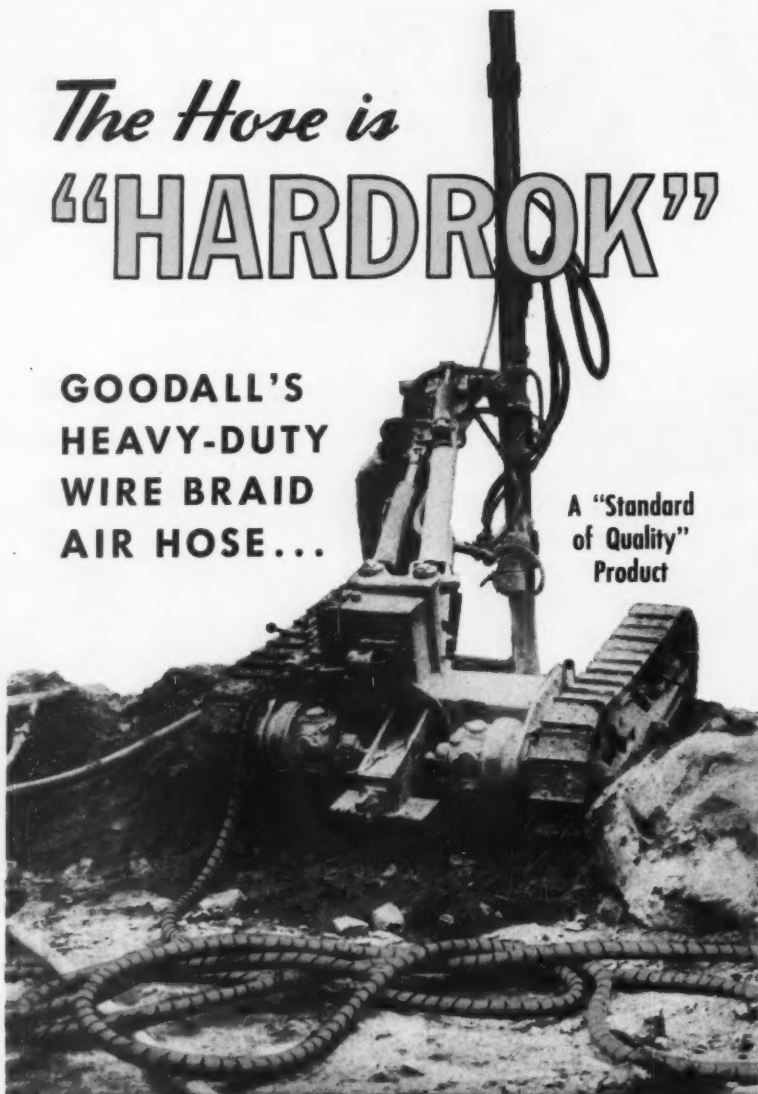
MACK
FIRST NAME FOR
TRUCKS



The Hose is "HARDROK"

**GOODALL'S
HEAVY-DUTY
WIRE BRAID
AIR HOSE...**

A "Standard
of Quality"
Product



*There's No Mistaking That Yellow Cover —
Black Stripe... You See it Everywhere!*

SPECIFICATIONS: "Synplastic" oilproof tube; horizontally braided steel wire reinforced carcass; tough, wear-resistant yellow rubber cover with identifying black spiral stripe. Sizes ½" to 3", in maximum lengths of 50 feet.

"If it's GOODALL, it MUST be GOOD!"

Contact Our Nearest Branch for Details and Prices

Manufacturers of Mechanical
Rubber Products—Since 1870



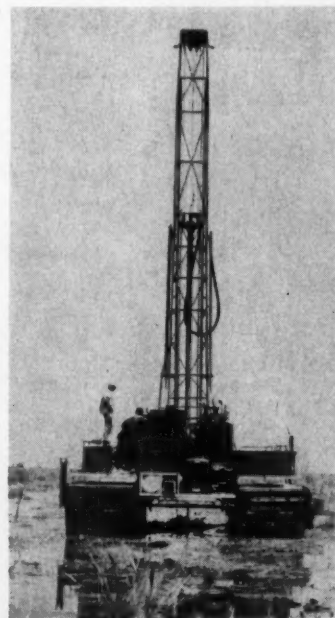
Standard of Quality HOSE • BELTING • FOOTWEAR
CLOTHING • EXPANSION JOINTS • PACKINGS • LINERS, ETC.

GOODALL Rubber Company

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N.J.
Branches and Distributors Throughout the United States and in Canada

JOB TALK ...

continued from page 20

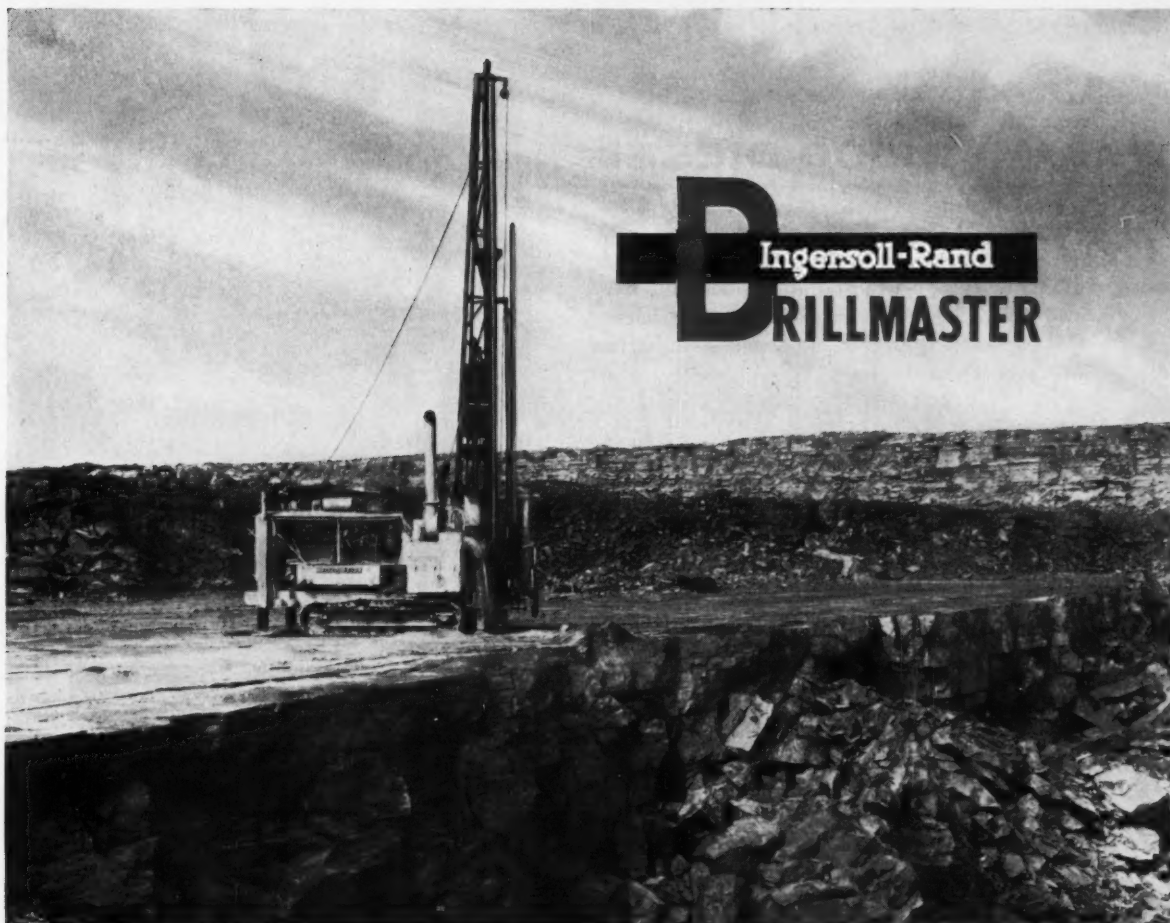


Swamp Buggy Rides On Crawler-Pontoons

A rig mounted on two pontoons and powered by a crawler track system carries a 15-ton drill through Florida's swampy Everglades. Contractor Reynolds & Smith of Morehaven, Fla., devised the rig for a job involving construction of two levees for the Army Engineers' Central Southern Florida Flood Control project. One levee is 27 mi long the other 11 mi.

Each of the two pontoons that support the platform of the carrier measures 5x5x25 ft. A track system made up of 5-ft-wide steel shoes linked together into an endless chain runs around each pontoon. An auxiliary engine mounted on the front of the carrier powers the tracks through a sprocket and chain arrangement.

The swamp buggy holds a 30-AW Speedstar drill rig manufactured by the Buffalo-Springfield Co. The rig drills 5-in. blast holes through the muck under the swamp water, which ranges in depth from 10 to 20 in. The drill is designed for both air and rotary gun operation. After blasting, the contractor excavates muck with a dragline to cut a canal and build a levee alongside it.



3 I-R Drillmasters REPLACE 17 OTHER DRILLS in large quarry operation

In a four-million-ton per year quarry, operated by Solvay Process Division, Allied Chemical Corporation, three Ingersoll-Rand Drillmasters are now doing the same amount of work that previously required eleven churn drills and six wagon drills!

Based on the performance of the first Drillmaster, which drilled about 100,000 ft. in the first year of operation, it was apparent that major savings could be made by this advanced drill-

ing method using the revolutionary I-R DOWN-HOLE drill. Two more machines were purchased and the 17 other drills were put on the retirement list. The saving in direct labor was equally impressive, releasing needed manpower for other operations.

For maximum production at lowest overall cost, join the swing to the Drillmaster method. Your Ingersoll-Rand representative will be glad to tell you all about it. Call him today.



Ingersoll-Rand

5-942

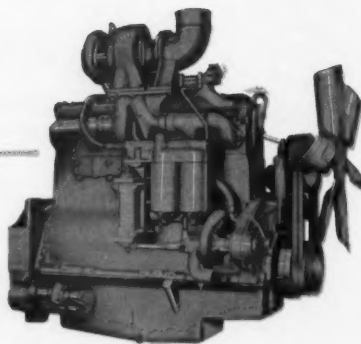
11 Broadway, New York 4, N.Y.

A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR ROCK DRILLING

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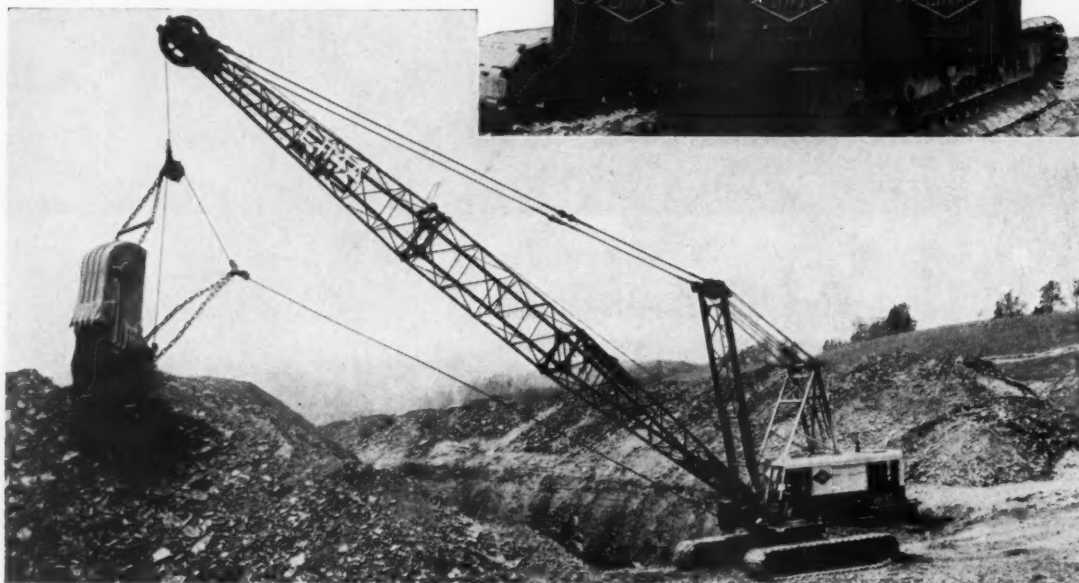
THE 21000 DIESEL

The Allis-Chalmers 350-hp, turbocharged 21000 diesel is gaining acceptance at an ever-increasing rate. For each new installation adds still more evidence of its remarkable efficiency — efficiency that passes along an 8- to 27-percent saving in fuel wherever it's used.



MOVES IN...

The new, controlled-turbulence, open-chamber design packs maximum horsepower into a compact package . . . greatly simplifies installation. Allis-Chalmers engineers work closely with the equipment manufacturer on adaptation and proper application of the engine.



GIVES SMOOTH, CONTROLLED POWER IN THE TYPE 1250

Here in this 3½-yd Type 1250 Lima dragline, the 21000 engine adds still further to its reputation. Fuel savings have been as expected. And as for ability to get the job done, its responsiveness and acceleration have been outstanding.

Performance like this has led many manufacturers to standardize on the 21000 and other "Thousand Series" diesels. Get full information from your dealer or direct from Allis-Chalmers, Milwaukee 1, Wisconsin.

BC-37

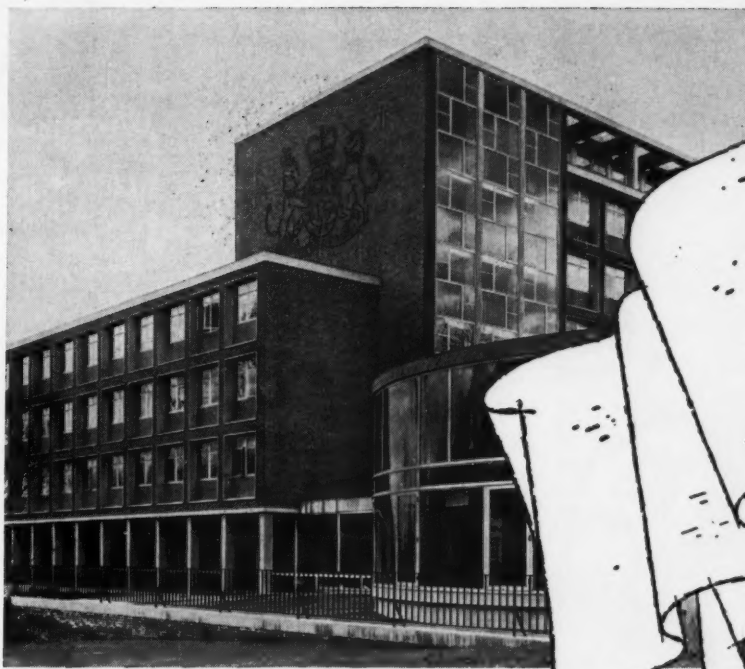
The 21000 also is offered in the Lima Type 803.

ALLIS-CHALMERS



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CONSTRUCTION METHODS



British Embassy, Washington, D. C.

Architect: Eric Bedford, Chief Architect and W. S. Bryant, Superintending Architect, British Ministry of Works.



UNDER TWO FLAGS . . .

Lehigh Mortar Cement



Swiss Embassy, Washington, D. C.

Architect: William Lescaze, New York, N. Y.

• The British and Swiss Embassies in Washington are recent examples of fine masonry work on which John McShain, Inc. has used Lehigh Mortar Cement.

They know from long experience that the workability and plasticity of Lehigh Mortar Cement help masons do top quality work—that its uniformity and durability contribute to clean, strong, weathertight walls.

Use Lehigh Mortar Cement on your next job. It will help your masonry crew get the best possible results. Lehigh Portland Cement Company, Allentown, Pa.

Contractor: John McShain, Inc.,
Philadelphia, Pa. and Washington, D. C.

Lehigh Mortar Cement: Eckington Building
Supply Co.,
Washington, D. C.

Ready Mix Concrete: Howat Concrete Co.,
Washington, D. C.



• LEHIGH MORTAR CEMENT
• LEHIGH EARLY STRENGTH CEMENT
• LEHIGH PORTLAND CEMENT
• LEHIGH AIR-ENTRAINING CEMENT



**AMERICAN HOIST
and DERRICK COMPANY
ST. PAUL 7, MINNESOTA**

*A question every sewer
contractor should
ask himself:*

**why slice...why chop
when you can DIG
like this!**

Put any conventional-type backhoe to work in shale, hardpan or frost, and what happens? As any operator knows, the boom tends to ride up during inhaul. You end up with partially-filled dippers. Or you resort to chopping to get a full bite. Much the same thing happens on deep trenching. The deeper you go, the less force you have at dipper teeth. Again, yardage output suffers.

These slow-downs in tough materials or deep digging apply to the *best* of conventional-type backhoes... regardless of claims you may hear. You've lived with these conditions *because you had to*. But no more! AMERICAN'S POSITIVE-PRESSURE backhoe now gives you *fast, profitable production in the very toughest going*. Simplified diagram below shows you how it's accomplished. With POSITIVE-PRESSURE, boom *can't* ride up during inhaul... with the result that you get up to 300% more penetration force behind dipper teeth.

For all its advantages, the POSITIVE-PRESSURE system is remarkably simple and trouble free. No pumps, no powered mechanisms of any kind. Fully automatic. Let us tell you all about it... **NOW!**

B-728

WITH AMERICAN'S EXCLUSIVE POSITIVE-PRESSURE BACKHOE you utilize almost entire weight of machine to penetrate hardpan, shale or deep frost. Boom can't ride up during inhaul. You eliminate chopping... reduce caving... save wear and tear. You increase output in easy materials too... get bonus yardage... especially on deep trenching.



Circle 32 on Reader Service Card



BETHLEHEM STEEL



TOWER OVERLOOKS SAN FRANCISCO BAY. This 29-story tower addition makes the Fairmont San Francisco's tallest hotel. To be ready for occupancy in 1962, the earthquake-resistant steel structure is connected with Bethlehem high-strength bolts. Bethlehem fabricated and erected the 3,089 tons of steelwork.



*for Strength
... Economy
... Versatility*

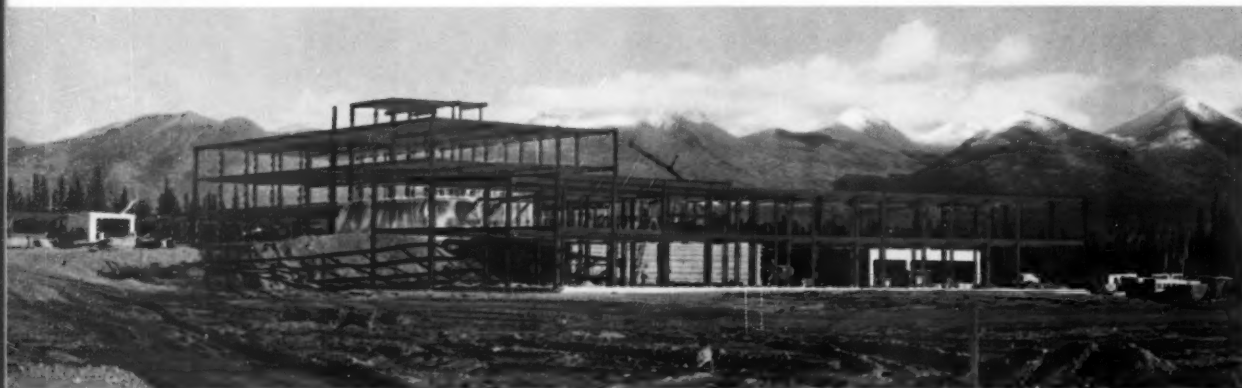
The 7-story base of the Fairmont Hotel's addition will contain a 200-car garage, a convention-exhibit hall, and, at lobby level, a dance pavilion and garden area.



Architect: Mario Gaidano; Structural engineer: H. J. Brunnier; General contractor: Haas and Haynie Corporation



Architect: Stone, Marraccini and Patterson; Associate architect: Foss, Olsen and Sands; Consultant: Alston G. Gutterson; Structural engineer: John H. Stevenson; General contractor: Lease Company, Inc.; Fabrication and erection: Bethlehem Steel



ALASKAN HOSPITAL STEELWORK ERECTED IN 4 WEEKS. The 608-ton steel frame for this \$5½-million state mental hospital at Anchorage had to go up fast . . . and it did. Steel framing will also make it easy to add floors when the hospital's 225-bed capacity can be doubled.



MAN-MADE "CANYON" OF STEEL SHEET PILING. Within three years, ocean-going vessels will steam up a 43-mile-long, deepwater channel from San Francisco Bay to Sacramento. At the right, in this view, is a portion of one of two 400-ft-long approach guide walls for California's first navigational locks. The "canyon" walls are formed by Bethlehem steel sheet piling. The locks, located near Sacramento, are a section of a barge canal to connect the deepwater channel with the Sacramento River.

Design, engineering and supervision of construction: U.S. Army Corps of Engineers; Contractors: Lock-Bridge Constructors, a joint venture of Rothschild, Raffin and Weirick, Inc., Yuba Consolidated Industries, Inc., and George Pollock Co.



TUNNEL BEGINS 200-MILE TRIP. This 305-ft-long steel segment is one of twelve being fabricated at Port Deposit, Md., for a two-lane vehicular tunnel to be laid in a trench on the bottom of the Elizabeth River, connecting Norfolk and Portsmouth, Va. Each segment consists of ten 33-ft-diam joined assemblies totalling nearly 600 tons of steel, much of it steel plate supplied by Bethlehem. Each segment is launched into the Susquehanna River and towed 200 miles to the job site where it is sunk into position.

Owner: Elizabeth River Tunnel District of Norfolk; Designer and supervisor of construction: Parsons, Brinckerhoff, Quade and Douglas; Prime contractor: Diamond Construction Co.; Fabricator: Wiley Manufacturing Co., subsidiary of Republic Industrial Corp.

for Strength
... Economy
... Versatility



Substructure contractor: James P. McHugh Construction Co.; Approaches contractor: J. M. Corbett Co.; Electrical contractor: Wood Electrical Construction, Inc.; Design and engineering: Dept. of Public Works—George DeMent, Commissioner; Bureau of Engineering—Dick Van Gorp, Chief Engineer; Div. of Bridges and Viaducts—Stephen J. Michuda, Chief Bridge Engineer; Consultants—A. J. Boynton & Co.

Owner: District of Columbia Army Board;

Architect and engineer: Dahl-Ewin-Osborn; Builder: McCloskey & Co.



NEW STADIUM FOR THE NEW SENATORS, and the Washington Redskins. Sixty-six giant frames cantilever far out over the stands in this unique Washington, D.C., stadium. The frames, welded from Bethlehem steel plate, will support the roof of this \$15-million, double-deck, circular structure. More than 7,000 tons of steelwork were fabricated and erected by Bethlehem. Bethlehem also supplied over 5,000 tons of steel reinforcing bars. Seating capacity: 43,500 for baseball and 50,000 for football.

STEEL DOME FOR UNIVERSITY AUDITORIUM.

Brown University will soon stage its hockey games in this unique structure . . . the George V. Meehan Auditorium. The 208-ft-diam circular dome is framed with 296 tons of Bethlehem structural steel. Some 51,700 linear ft of 1 1/4-in. Bethlehem steel pipe form a part of the ice-making system. The rink also contains 185 tons of Bethlehem steel reinforcing bars.



Architect: Perry, Shaw, Hepburn and Dean;

Consulting structural engineer: Nichols, Norton & Zaldastani;

General contractor and steel erector: Gilbane Building Co.;

Fabricator: Tower Iron Works, Inc.;

Refrigeration and piping contractor: Henry J. Coupe & Son, Inc.;

Pipe supplier: United Supply Co.



\$8 1/2-MILLION VIADUCT will speed traffic over the Chicago Junction Freight Yard. South Damen Avenue Viaduct will run 4,760 ft, plus 1,940 ft of approaches. The 63-ft width includes two 25-ft roadways, a medial barrier, and a sidewalk. Bethlehem is fabricating and erecting 9,000 tons of structural steel. Pierwork, approaches, and paving will need 2,200 tons of steel reinforcing bars, a major portion of which Bethlehem is supplying.

STEEL WATER PIPE FOR ST. PAUL.

Two major lines are among the several phases of St. Paul's farsighted, \$21.5 million water supply project. The Fridley Line (above) will be a 42,000-ft, 60-in.-ID main, extending from the Mississippi to a receiving basin. The Vadnais Conduit, 22,000 ft of 90-in. ID gravity-flow line, will deliver water from the storage area to a filter plant. Both lines will consist almost entirely of Bethlehem steel pipe.



Consulting engineer: Black & Veatch;

General contractor: Ashbach Construction Co.;

Subcontractors for Fridley Line: Peter Lametti Construction Co. (Pipe laying),

Moorhead Machinery & Boiler Co. (Welding),

Koppers Co., Inc. (Exterior pipe coating),

Centrline Corp. (Cement mortar pipe lining)

BETHLEHEM STEEL



BIG STEEL BOLTS ANCHOR TITAN MISSILE SHAFT.

Pressure exerted by water seepage in Titan missile-launching silos at Royal City, Wash., tends to "float" tons of steel-reinforced concrete which make up the walls and floors of the silos. Bethlehem is supplying some 2,500 special, 30-ft-long, large-diameter bolts to anchor the floor. Bethlehem is also furnishing more than 2,000 tons of fabricated structural steel for the launchers, and over 4,600 tons of fabricated reinforcing steel for the silos.

Engineer: U.S. Army Corps of Engineers;
Contractor: McDonald-Scott and Associates;
Miscellaneous fabrication: Northern Steel and Supply Co.



THIS 120-TON STEEL TENT frames a restaurant, cocktail lounge, and three function rooms for the Dolphin Motor Hotel, Quincy, Mass. Bethlehem is supplying all the structural steel used in this and the second phase of the 104-unit motel's construction.

Architect: Bedar & Alpers Associates;
General contractor: Oxford Construction Corp.;
Fabricator: Antonelli Iron Works, Inc.;
Erector: Daniel Marr & Son Co.

A COMPLETE LINE OF CONSTRUCTION STEEL

Structural Steel . . . all standard and wide-flange shapes

Open-Web Joists . . . complete series of shortspan and longspan types

Slabform . . . formed sheets for poured concrete floors and roofs

Construction Fasteners . . .

Standard—Bolts, Rivets, Nails, Spikes, Clevises, Turnbuckles, High-Strength Bolts

Specialty—Tie Rods, Anchor Bolts, U-Bolts, Special Fasteners

Fabricated Steel . . . Bethlehem fabricates and erects steelwork for many types of structures

Steel Pipe . . . Butt-Weld, Electric-Resistance Weld, and Electric Fusion-Weld in a full range of diameters

Wire Rope and Strand . . . for all construction uses . . . Stress-relieved Strand for prestressed concrete

Highway Steels . . . beam guard rail, bar mats, dowel joints, bridge rail, and many other highway specialties

Storage Tanks . . . every type of tank for water or fuel storage

Steel Piling . . . wide range of sheet and H-piling, and accessories

Concrete Reinforcing Bars . . . all sizes, with excellent bending and bonding qualities—rolled from new-billet steel

Galvanized Sheets . . . for ductwork, roofing and siding, drainage pipe

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



Consider these facts before you buy a rubber-tired tractor



The past few years have seen the introduction of a number of rubber-tired tractors. Some are new designs based on experience with farm tractors. Some are conversions of front-end loaders. But if your work calls for heavy-duty dozing, pushing, towing, stockpiling... it would pay you to invest in a tractor that is *proven and built to handle this type of assignment.*

Today's LeTourneau-Westinghouse Tournatractor® has 15 years of heavy-duty field experience behind it. Knowledge gained from work on every possible tractor application has led to continuous improvement in mechanical efficiency and performance. Result: Tournatractor is the *only* thoroughly job-proved rubber-tired tractor available for heavy-duty work.

Consider these other important LW tractor features:

- Anti-friction drive for dependability and low-maintenance costs
- Exclusive LW single-stage torque converter... proved on thousands of installations
- Instantaneous, "non-stop" gear selection with speeds to 18.5 mph... for maximum output
- Husky, all-welded box-type frame and oil-enclosures provide unique protection for its moving parts
- Electric or hydraulic blade control for fast, positive action.

The facts boil down to this:

When you buy a LeTourneau-Westinghouse Tournatractor, you're getting a proven machine.

Remember, too, you complete tractor jobs faster... in fact, *twice as fast* as slower-moving crawlers on 85% of your work. Why not see for yourself? We'll be happy to demonstrate.

CT-2429-G-1

LETourneau-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

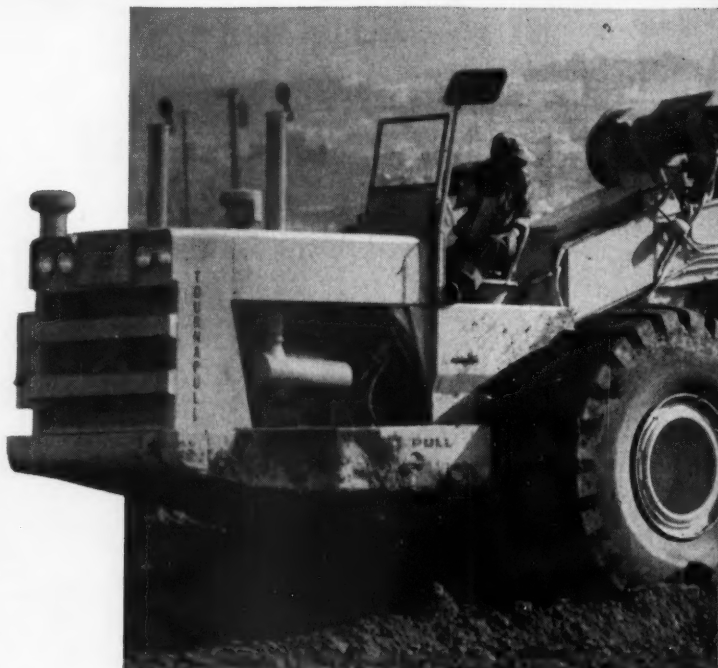
Circle 37 on Reader Service Card



Move 2 loads per trip

Here's the best way ever developed to cut *earth-moving costs*. Operate *two* scrapers behind a Tournapull® or Speedpull® prime-mover. Net result: You get 100% more capacity than a single scraper at only about $\frac{1}{3}$ extra cost!

Only LeTourneau-Westinghouse offers you a *practical tandem*, in a selection of *practical size-ranges*. Making the "breakthrough" possible is the famed LW electric control system, that sends working-power any distance, simply, efficiently. Consider how LW Tandems can put *you* in a more favorable position on the jobs you bid... help you make more profit on the jobs you take.

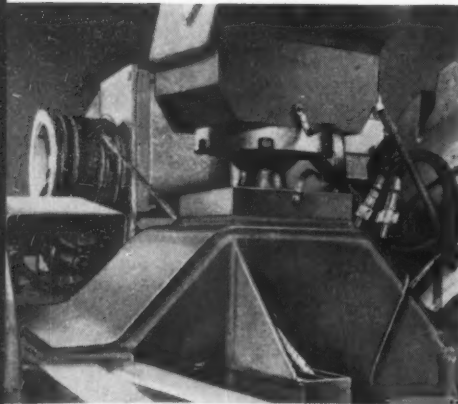


You save three ways with LW Tandem scrapers:

LOWER ORIGINAL INVESTMENT: To double your load capacity you pay only for a second scraper, plus incidental hitch and installation cost. You save the price of the second prime-mover!

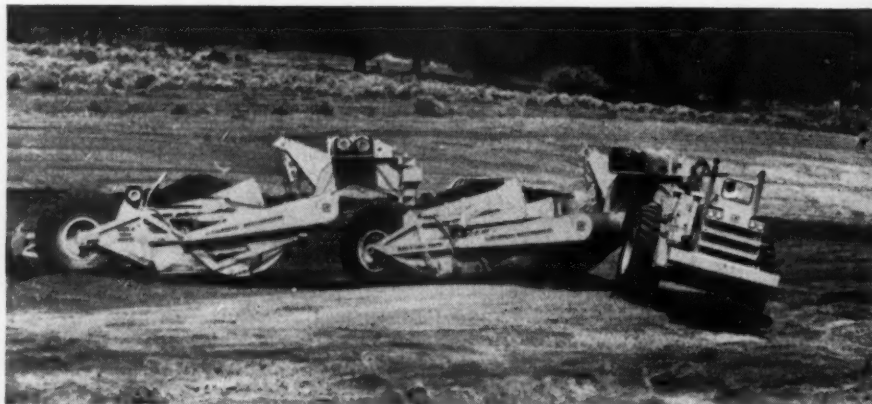
REDUCED OPERATING COSTS: Your only extra operating cost for the double-capacity LW Tandem scrapers is for a slight additional amount of fuel per shift. (One operator handles both scrapers.)

LESS MAINTENANCE: Upkeep for a single scraper and for LW Tandems are within pennies-per-hour of each other! There's the nominal maintenance cost of the additional scraper and its two tires, but you have no extra engine, transmission, or any other mechanical component to maintain!



Here's the hitch that doubles your capacity

Front scraper is joined to rear scraper by this ball-and-socket swivel hitch. Hitch base is welded to reinforced push-block frame of front scraper. Rear scraper's electric leads "plug in" to jacks on front scraper.



You get "single-scraper" maneuverability

Although an LW Tandem is considerably longer than a single scraper it needs only 10 to 15% more space for complete U-turn. Rear scraper "tracks" front scraper. You can perform any maneuver possible with single scrapers. No tendency to jackknife.

at only $\frac{1}{3}$ extra cost



You enjoy these OPERATING advantages, too:

NO SUPER-PUSHER NEEDED:

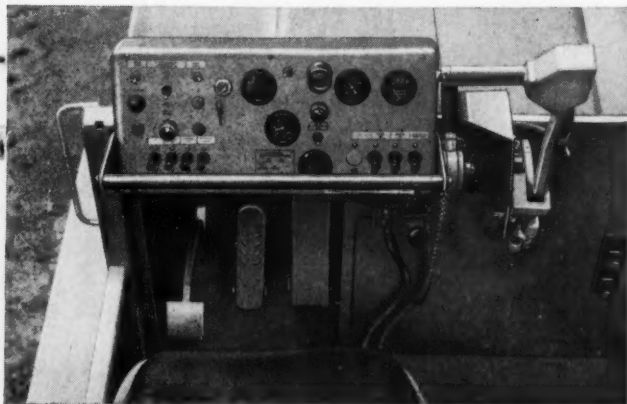
Your pusher loads only one of the tandem scrapers at a time, so you don't need "super" pushers or tandem-pushers. You save pusher positioning time, too.

LESS HAUL-ROAD TRAFFIC:

Tandem scrapers are no higher, no wider, than singles and can use any normal haul-road. You have fewer machines moving about, for less congestion, fewer delays. In addition, tests show that ton-for-ton, tandems punish haul roads less than single scrapers of equal capacity.

MORE ADAPTABILITY:

With LW Tandems you can meet changing job conditions, by hitching or unhitching the "extra" scraper in a matter of minutes. And you can still interchange your basic scraper for a 'Pull* Rear-Dump, as always!



"Electrics" make it possible, practical

These buttons operate bowl lift, apron, and tailgate... left row for rear scraper, right row for front scraper. LW "Electrics", with power transmitted to points of action, is the MAIN reason why only LW can give you a *practical* tandem scraper.

Choose from 18 to 58 cu yd capacity

You get extra tandem profits with any LW electric 'Pull prime-mover, 143 to 430 hp. Remember, too, your LeTourneau-Westinghouse Distributor can convert your *present* 'Pulls to tandem operation. He can also give you reliable engineering data that will show you on what job conditions you'll make *most* money with LW Tandems. Visit your LW Distributor soon.

*Trademark TP-2409-DC-2

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

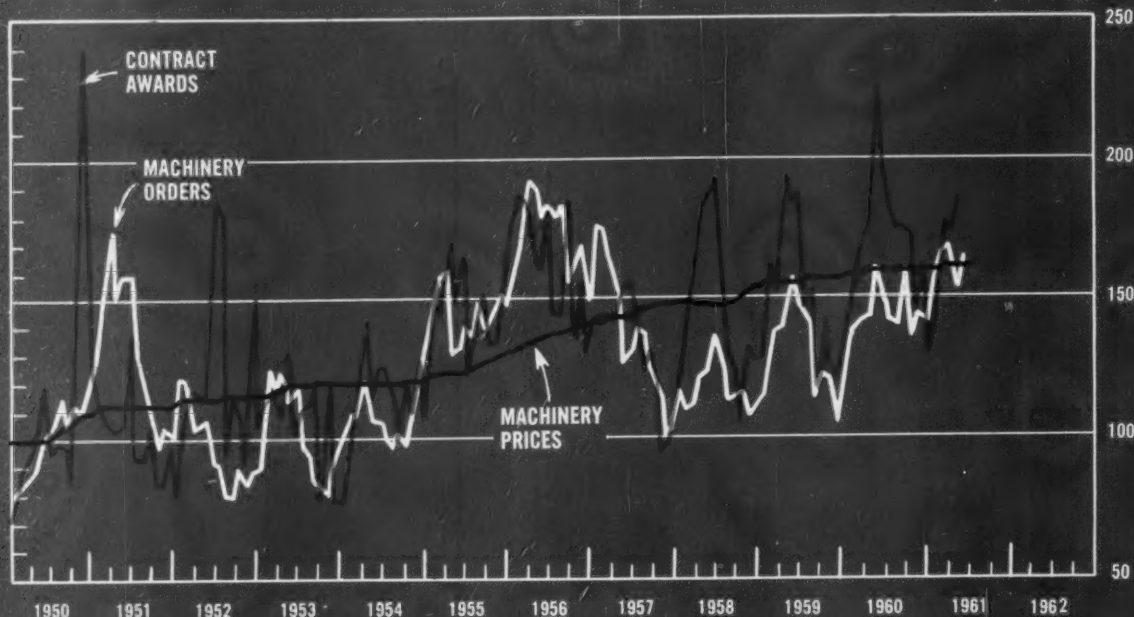
Where quality is a habit

Circle 39 on Reader Service Card



Trends in the Machinery Market...

Index, 1950 = 100



List Price Index Drops For First Time This Year

PRICE REDUCTIONS for four-wheel scrapers, rubber-tired tractors, cable power control units, and trailer dump wagons lowered the Bureau of Labor Statistics' index of average list prices for construction machines last month. The June 15 value dipped to 178.2, based on average f.o.b. prices during 1947-49 as 100. This compares with the May 15 value of 178.5, as revised by BLS.

Although these aren't the first price cuts in 1961 among the items covered by the BLS index, it's the first time since December '60 that the over-all index has declined.

As of June, 13 equipment categories indexed by BLS were priced under a year ago. This is another sign that this is an equipment buyer's market.

The construction machinery orders index shown on the chart above differs from the index of construction & mining machinery previously published here each month. It excludes mining machines and includes a somewhat different group of co-operating companies. The base year for the new orders index, as well as for the contract award index, has been changed from 1949 to 1950 equals 100. Both the old and the new orders indexes are computed by the McGraw-Hill Economics Dept.

New orders for construction equipment, placed by distributors with manufacturers, rose in May as dealers anticipated increased purchases by contractors. May was the tenth consecutive month in which the orders index topped a year ago. But the margin of increases has been shrinking. At 165, based on average monthly dollar volume in 1950 as 100, May's index was 1% above a year ago.

The contract award index moved up in June, though not enough to match last year. The six-month average was off 2%.

Price Index

	JUNE 1961	MONTH AGO	YEAR AGO	% CHANGE 1960-1961
All Types of Equipment	178.2	178.5*	175.3	+ 1.7
Cranes; Draglines, Shovels	173.4	173.4*	173.4	0
Shovel, ½ cu yd	173.1	173.1	167.9	+ 3.1
Shovel, ¾ cu yd	178.8	178.8	175.4	+ 1.9
Shovel, 1-1½ cu yd	191.0	191.0	188.2	+ 1.5
Shovel, 2-2½ cu yd	169.1	169.1	170.3	+ 1.6
Shovel, 3-3½ cu yd	159.8	159.8	167.8	- 0.7
Shovel, 6 cu yd	197.9	197.9	197.9	0
Crane, truck mounted	165.9	165.9	168.2	- 1.4
Crane, tractor mounted	135.1	135.1	135.1	0
Bucket, clam shell	162.9	162.9	162.9	0
Bucket, dragline	169.3	169.3	169.3	0
Scrapers and Graders	165.7	166.6	166.5	- 0.5
Scraper, 4 wheel, 8-10.5 cu yd	145.3	155.0	155.0	- 6.3
Scraper, 4 wheel, 12-15 cu yd	153.3	156.8	156.8	- 2.2
Scraper, 2 wheel, 15-19.5 cu yd (a)	126.2	126.2	124.9	+ 1.0
Grader, heavy duty	174.1	174.1	173.7	+ 0.2
Grader, light and medium	170.9	170.9	171.1	- 0.1
Tractors (non-farm, incl industrial)	195.1	195.6*	191.6	+ 1.8
Wheel type, off-highway (a)	127.6	129.2	129.2	- 1.3
Crawler type, 50-74 dph	205.3	205.3	194.0	+ 5.8
75-99 dph	204.8	204.8	201.2	+ 1.7
100-154 dph	200.2	200.2	195.3	+ 2.5
155-200 dph	208.6	208.6	203.3	+ 2.6
Machinery, Tractor Mounted	177.9	178.3	169.5	+ 5.0
Dozer, cable controlled	164.8	164.8	154.4	+ 6.7
Dozer, hydraulic controlled	201.4	201.4	186.6	+ 7.9
Cable power control unit	148.8	152.9	152.9	- 2.7
Loader, tractor shovel	166.7	166.7	163.2	+ 2.1
Specialized Machinery	159.5	159.6*	157.8	+ 1.1
Ditcher	153.8	153.8	150.2	+ 2.3
Roller, tandem	228.5	228.5	226.4	+ 0.9
Roller, 3 wheel	178.7	178.7	178.7	0
Ripper and rooter	164.5	164.5	156.6	+ 5.0
Dewatering pump, 10 M gph	108.5	108.5*	111.5	+ 2.7
Dewatering pump, 90 M gph	156.1	156.1*	151.5	+ 3.0
Portable Air Compressors	183.6	183.6*	167.5	+ 9.6
Contractor's Air Tools	190.5	190.5*	181.6	+ 4.9
Mixers, Pavers, Spreaders	161.6	161.6*	161.8	- 0.2
Mixer, portable, 11 cu ft	169.6	169.6	166.8	+ 1.7
Mixer, portable, 16 cu ft	174.7	175.8*	172.7	+ 1.1
Mixer, truck, 6 cu yd	131.1	131.1	135.1	- 3.0
Mixer, paving, 34 cu ft	192.9	192.9	196.7	- 1.9
Concrete finisher & spreader	198.4	198.4	201.9	- 1.7
Bituminous distributor	124.5	124.5	126.2	- 1.3
Bituminous spreader	179.4	179.4	179.4	0
Bituminous paver	168.6	168.6	165.6	+ 1.8
Off-Highway Trucks, Wagons (b)	102.5	102.3*	102.5	0
Contractors off-highway truck (b)	102.0	102.0	102.0	0
Trailer dump wagon (b)	104.5	106.7	106.7	- 2.1

* (a) January, 1955 = 100 • (b) January, 1958 = 100 *Revised
BLS Primary Market Price Indexes, U. S. Department of Labor, 1947-49 = 100



FIVE LAYERS TOUGH

When you put your equipment to work, loads on connecting rod and crankshaft bearings build up to 1,000, 2,000, 4,000 and more pounds per square inch. Engine bearings must be rugged enough to stand up under these two-ton pressures.

Federal-Mogul developed and built the 5-layer, heavy-duty replacement bearing for just this kind of service. It will take continuous loads up to 4,800 psi... triple the load limit of the best babbitts. Five separate layers give you high

fatigue strength for high horsepower engines plus the good "conformability" that's necessary for new bearings to adjust to the crankshaft during break-in.

The complete Federal-Mogul line also includes overplated aluminum-alloy, straight copper-alloy and babbitt bearings. Each is designed for a particular type of engine and gives maximum service in it. When you need replacement bearings, get Federal-Mogul... and you'll get the best.



FEDERAL-MOGUL ENGINE BEARINGS

FEDERAL-MOGUL SERVICE

DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 13, MICHIGAN

BIG POWER BIG CAPACITY

new SS-40

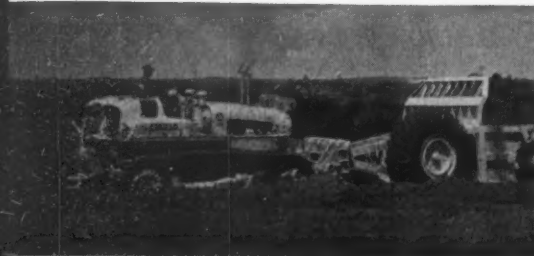
For moving loads up to 125,000 pounds on long, high-speed scraper hauls, the new Model SS-40 has already proved it's away ahead of any other big scraper in productive capacity. Powered by a 12 cylinder GM diesel of 432 h.p. with 4-speed Torqmatic Drive, this "Euc" moves big payloads at speeds up to 34 m.p.h. Stability and good weight distribution of the six-wheel SS-40 permit faster safe travel speeds that save time on every cycle. With its new push-out, roll-out ejector this "Euc" is the first super scraper able to dump big loads in a hurry.

Teamed with the TC-12 "Twin" Crawler for push loading, the SS-40 gets a heaped load in its low, wide bowl and is on the haul road fast. This big power, big capacity "Euc" equipment is your best bet for high production and low yardage costs on dams, highway work, other heavy construction and stripping operations. Ask your dealer for specifications and technical data on the SS-40 Scraper and TC-12 Crawler.

EUCLID Division of General Motors, Hudson, Ohio
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

Maneuverability and 425 net h.p. make the TC-12 with full-power shift tops for pusher work, heavy dozing and ripping tough material.

New radial design of apron and a push-out, roll-out ejector speed up dumping . . . gets rid of big loads, even sticky material, fast and clean.



BIG PRODUCTION



52 YARDS
HEAPED



34 M.P.H.
LOADED



432 H.P.
V-12



PUSH-OUT,
ROLL-OUT > EJECTOR



EUCLID

FOR MOVING EARTH, ROCK, COAL AND ORE

AUSTIN-WESTERN PRODUCTS SAVE TIME AND MONEY



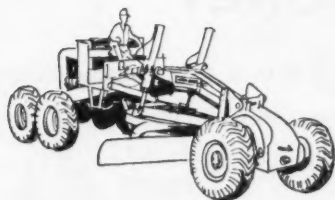
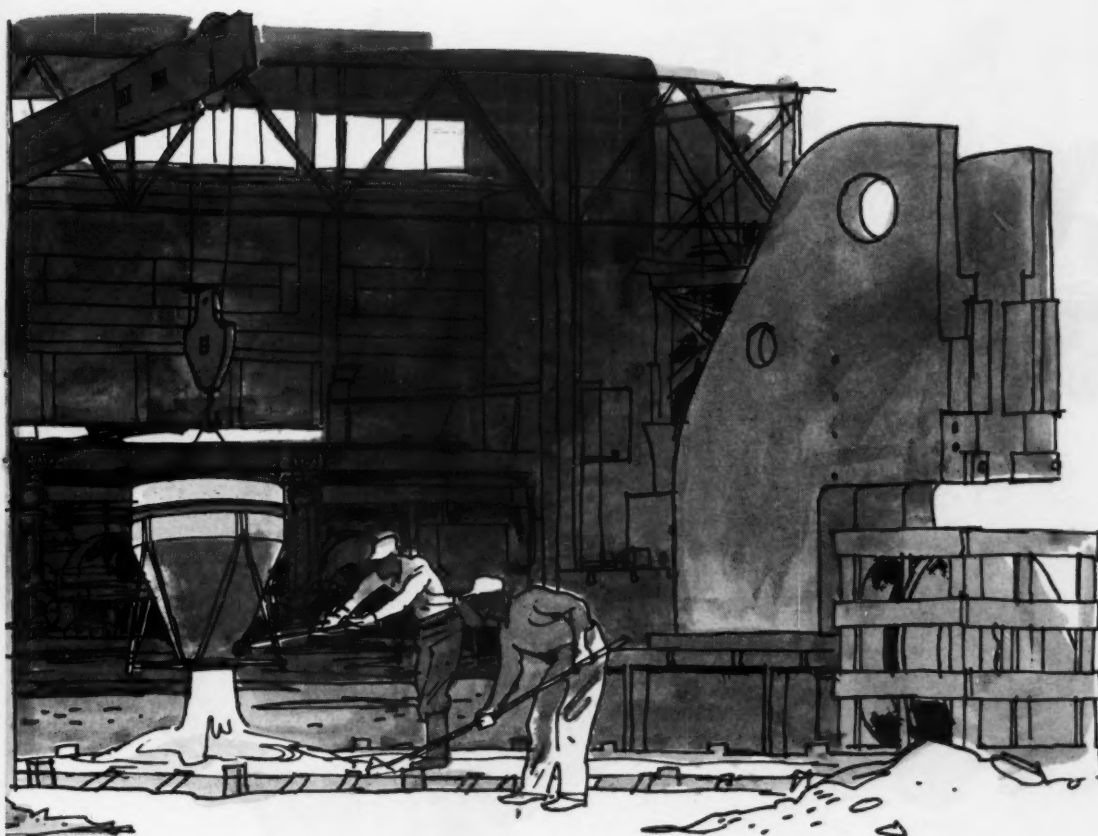
A-W CRANES..... JACKS-OF-ALL-TRADES ...MASTERS OF MANY

Imagine how you could speed things up with an Austin-Western hydraulic crane like this. It is so versatile and mobile that it can serve different crews on one or more nearby job sites *almost simultaneously* . . . releasing costly manpower and equipment for other tasks!

A-W cranes come in five models with capacities up to 11 tons. Self-propelled, truck or stationary mounted. Telescoping "live" hydraulic booms extend to 48 ft., reach up to 55 ft. above ground, and rotate in continuous full circle on most models.

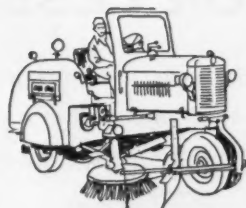
Here is why they are the most profitable and useful all-purpose lift, carry and place equipment made. For example, the models 210, 220 and 410 feature: *All-wheel steering*—amazing maneuverability in tightest quarters. *All-wheel drive* provides traction for any terrain; climbs steep off-the-road grades. *Overhead clearances* are low. *Every operation* is hydraulically controlled; *road speeds* range up to 35 mph!

A-W's are such jacks-of-all-trades because optional attachments include clamshell; orange peel; pintle hook; winch; remote control personnel platform for work aloft; magnet; load carrying platform; snow plow or dozer blade. Write today for more information about Austin-Western's full line of time and money-saving hydraulic cranes.



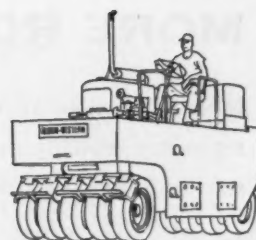
A-W POWER GRADERS

9 models; all-wheel drive and steer 4-wheel Pacers and 6-wheel Supers. Weight classification to 30,000 lb., power ranges to 176 hp.



A-W MOTOR SWEEPERS

2 models: 2-yd. Model 40; 4-plus Model 60. Safe, easy front steer; full visibility. Simplified design; broom and hopper in rear.



A-W COMPACTION EQUIPMENT

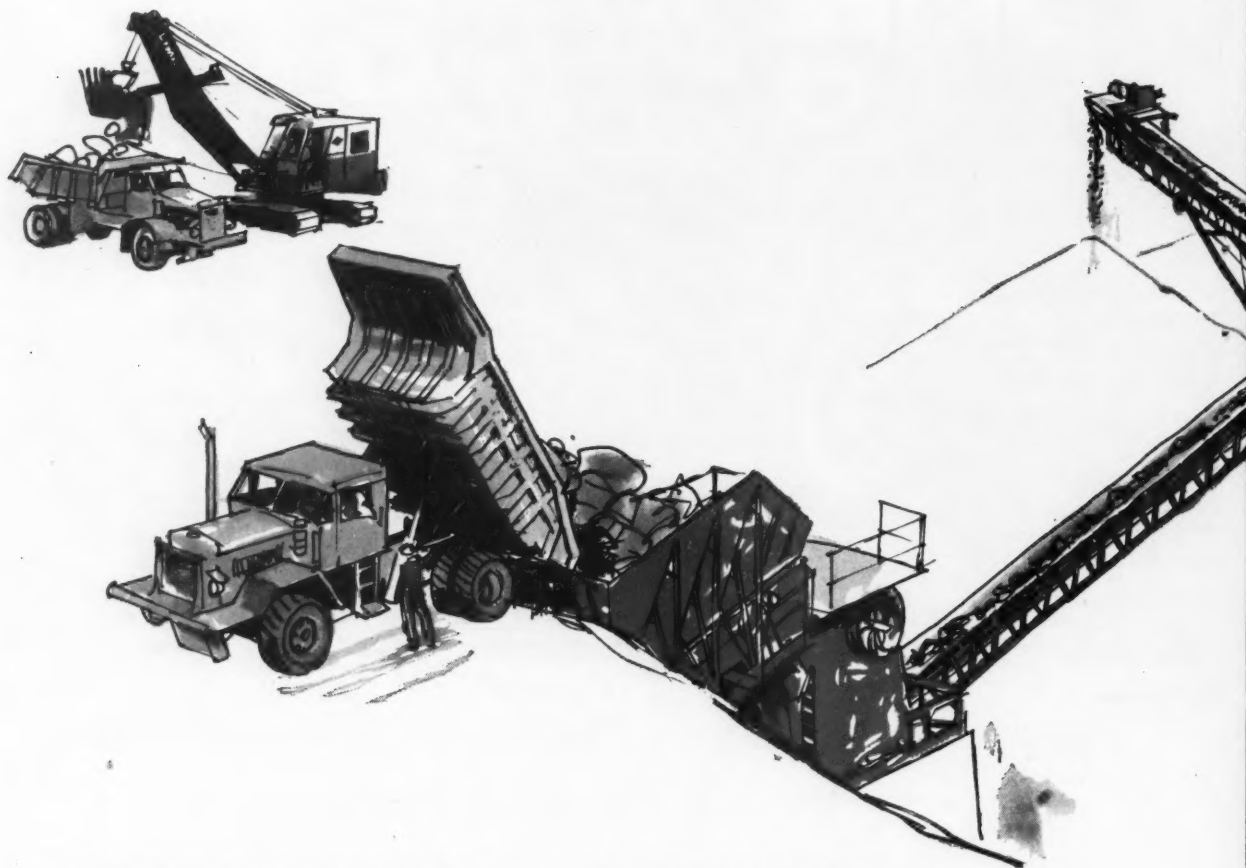
Variable-weight tandem, 3-wheel and pneumatic tired rollers; portable tandem; Roller-Compactor; vibratory attachment for most 3-wheel rollers.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON

Circle 45 on Reader Service Card



THE USEFULNESS OF A **LIMA AUSTIN-WESTERN**



MORE ROCK FOR LESS MONEY...

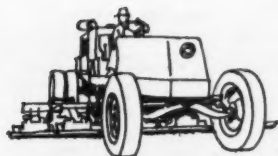
More for less, of anything, is a rarity today. But you can get it with a Lima Austin-Western stationary crushing installation like this, because it is a high-speed, big-output operation from start to finish. It can be custom engineered for a specific operation—*such as yours!*

High performance is possible because only the finest materials are used—such as antifriction roller bearings and many special-strength alloy steels scientifically checked for structural perfection. Years of manufacturing experience have produced highly refined designs which eliminate many troublesome shafts, gears, sprockets, clutches, chains and belts. Deep crusher jaws with long, smooth stroke assure dependably high production—more yards per hour, lower cost per yard.

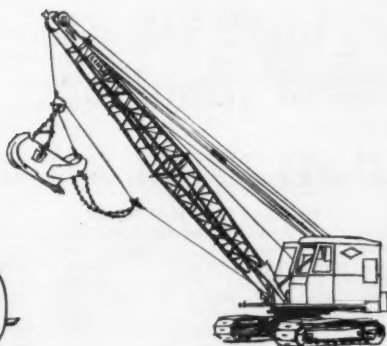
The Lima Austin-Western line includes many sizes of jaw and roll crushers, matching screens, elevators, feeders, conveyors and bins. Portable Lima Austin-Western crushing plants are available in various models to fit your exact requirements.

Ask us now for facts and figures on the profit-producing performance of our crushing, screening and washing equipment.

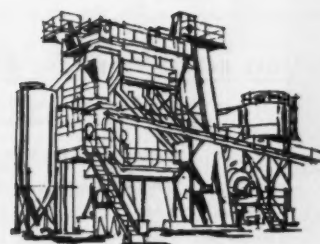
6125



LIMA MODEL D ROADPACKER
—Six vibrating shoes compact fast and deep for profitable single-course construction; available in 12-shoe Super model.



LIMA SHOVELS AND CRANES
—Interchangeable front ends. Shovels to 8 yd.; cranes to 140 tons on crawlers, 80 tons on rubber; draglines variable.



LIMA MADSEN ASPHALT PLANTS
—available in models with batching capacities from 1000 to 10,000 lb.

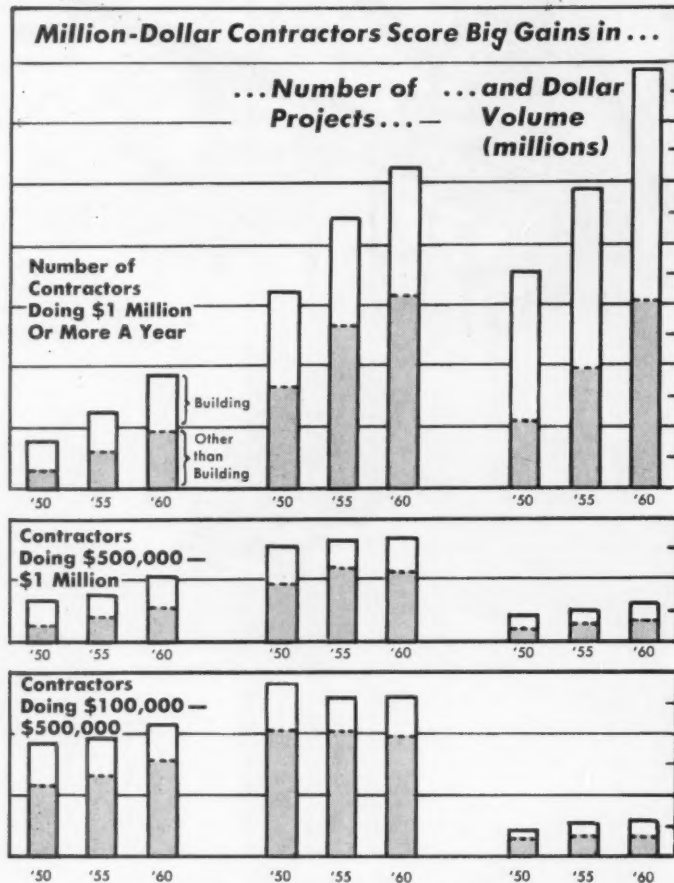
LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment
BALDWIN · LIMA · HAMILTON
CONSTRUCTION EQUIPMENT DIVISION · LIMA, OHIO

Circle 47 on Reader Service Card



Construction Business...

More Firms Booked \$1 Million



CM&E Data based on contractors with \$100,000 or more in new 1960 contracts.

A RECORD NUMBER of heavy construction contractors won \$1 million or more in new contracts last year. Membership in the million-dollar club rose 8% to 3,783.

This continues a 10-yr trend: the rate of increase in the number of million-dollar contractors is higher than the rate of increase of contractors with smaller annual volumes (see chart at left).

The number of contractors who received between \$500,000 and \$1 million in 1960 heavy construction contracts increased only 3% to 2,095. The number of firms with \$100,000 to \$500,000 in new contracts actually decreased 2% to 4,356, according to CM&E's annual analysis of new business.

And million-dollar contractors also scored better gains last year in dollar volume of awards (up 7%) and in the number of new projects (up 9%) than did contractors in the smaller volume brackets (see table below).

Dollar volume of those contractors in the medium-sized category was up only 2%, and those in the lower bracket actually had less volume last year than in 1959.

As new firms enter the market in the lower-volume groups, other contractors have been moving up the latter toward the million-dollar category. Since 1944 the number of million-dollar contractors

CONTRACTORS RANKED BY VOLUME OF NEW CONSTRUCTION CONTRACTS IN 1960

	Firms with \$1,000,000 or More in Construction Contracts					Firms with \$500,000-\$1,000,000 in Construction Contracts					Firms with \$100,000-\$500,000 in Construction Contracts				
	Number of		Contract Value		Contract Value	Number of		Contract Value		Contract Value	Number of		Contract Value		Contract Value
	Contractors	Projects	% Chg.	% Chg.		Contractors	Projects	% Chg.	% Chg.		Contractors	Projects	% Chg.	% Chg.	
	1960 fr '59	1960 fr '59	1960 fr '59	1960 fr '59		1960 fr '59	1960 fr '59	1960 fr '59	1960 fr '59		1960 fr '59	1960 fr '59	1960 fr '59	1960 fr '59	
TOTAL - ALL TYPES	3,783 + 8	10,542 + 9	\$13,742 + 7			2,095 + 3	3,398 - 1	1,301 0			4,356 - 2	5,284 - 1	\$1,078 - 1		
OTHER THAN BUILDING	1,936 + 9	6,292 + 9	6,143 +21			1,101 0	2,192 - 4	671 - 1			3,098 - 2	3,921 - 2	699 - 2		
Waterworks	206 -16	467 +21	281 +16			134 + 3	172 -10	45 -24			332 +10	418 +13	61 + 7		
Sewerage	325 - 9	684 +12	360 - 1			223 - 6	360 + 1	106 - 5			545 - 9	605 - 9	116 - 4		
Bridges	357 - 9	700 +13	675 +63			103 -30	142 -39	43 -34			280 + 4	310 + 4	54 0		
Highways and streets	1,011 - 2	3,336 +19	2,513 +24			582 + 9	1,156 +13	320 +16			1,265 + 2	1,520 0	272 + 3		
Earthwork, dams, waterways	310 -16	294 -37	721 + 1			99 -20	136 -10	40 -22			243 -10	318 - 3	50 - 4		
Airports	306 -29	463 -15	709 -10			116 -20	157 -18	58 -17			308 - 9	346 - 2	67 - 7		
Unclassified	265 - 9	348 + 8	885 +67			128 + 5	169 +11	58 + 7			382 -14	404 -13	78 -12		
Federal (included above)	511 -15	608 -30	1,132 -11			200 -19	352 + 7	89 -25			530 - 7	604 - 6	111 - 9		
BUILDING	1,847 + 8	4,250 + 8	7,598 - 2			994 + 7	1,206 + 4	630 + 1			1,258 - 3	1,363 0	380 + 1		
Industrial	531 -14	1,077 - 1	2,060 -25			168 -19	281 + 2	98 + 5			619 - 6	689 - 4	134 + 1		
Mass housing, commercial and public	1,514 - 1	3,173 +12	5,538 +11			718 -11	925 + 5	532 + 1			643 0	674 + 4	246 + 1		
Housing	592 +17	884 +14	2,004 +20			267 +13	281 +11	170 + 8			162 - 1	165 - 4	69 0		
Schools	619 +11	988 +13	1,163 +18			308 + 6	317 + 3	178 - 7			164 +12	160 +10	69 +10		
Offices, private	183 +23	244 +34	544 +11			38 +27	40 +60	22 +47			28 +180	28 +115	11 +120		
Offices, private	54 - 4	62 0	156 0			6 -77	7 -74	5 -69			6 -65	5 -71	2 -71		
Shopping centers, stores	191 + 2	281 +17	482 +11			56 - 2	59 - 2	34 - 3			24 -27	25 -24	11 -21		
Public industrial, military and atomic energy	81 -21	95 -30	183 -53			29 -27	36 -12	18 - 5			76 -25	82 -26	18 -25		
Other building: private	327 +17	390 +18	539 +16			112 +26	110 +24	62 +29			110 +25	106 +25	40 + 8		
Other building: public	192 - 6	229 - 5	467 +10			77 - 1	75 - 3	44 - 4			99 +39	103 +41	28 +17		
Federal (included above)	172 -23	95 -57	359 -55			34 -45	29 -46	15 -50			99 +16	86 - 9	20 - 5		

AMERICAN CABLE



Border Road Construction Company finds

VHS at its best in heavy soil

LAREDO, TEXAS—Any scraper cable worth its salt will take the routine jobs in stride. But the rough jobs—the ones where you're digging heavy soil—they're the jobs that separate "weak sister" cables from brands with extra strength and toughness you can see. Border Road Construction tested VHS under just such conditions on a job site near Mission, Texas recently. Using 1/2" VHS cable on Cat DW-15 and DW-20 scrapers, owner Roy Rash reports the outcome of this test. "VHS lasts longer and wears longer in heavy soil."

What is VHS? What will it do for you?

- It's 15% stronger than Improved Plow steel.
- It's tougher, more resistant to wear.
- It stands up better on scrapers, dozers, shovels and draglines—the rough work.
- It cuts the number of rope replacements.

Your American Cable distributor has TRU-LAY VHS now. He can give you immediate delivery of the size and construction you need.

Mail Coupon for **FREE** Wire Rope Recommendation Booklet

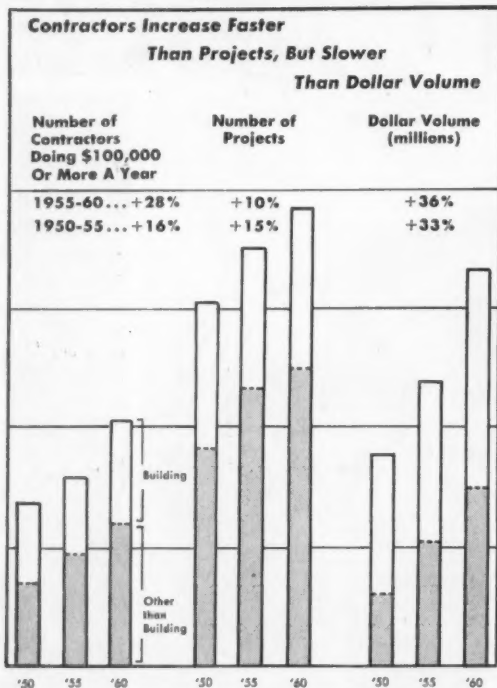
American Cable Division
American Chain & Cable Company, Inc.
WILKES-BARRE, PA.



Please send me **FREE** American Cable Wire Rope Recommendation Booklet listing right diameter, construction, lay and grade of wire rope for over 50 general contracting jobs.



Name _____
Company _____
Address _____
City _____ Zone _____ State _____ CM _____



has increased each year, with the exception of 1959 when the federal-aid highway financing fiasco

left many contractors lean and hungry. In the same period, the number of contractors doing less

Reported by CONSTRUCTION METHODS

TYPE OF WORK	Number of Contractors		Projects		Contract Value (millions)	
	1960	% Chg. fr '59	1960	% Chg. fr '59	1960	% Chg. fr '59
TOTAL—ALL TYPES	10,234	+ 3	19,224	+ 4	\$16,123	+ 6
OTHER THAN BUILDING	6,135	+ 1	12,505	+ 4	7,512	+ 16
Waterworks	672	— 1	1,057	+12	387	+12
Sewerage	1,093	— 8	1,649	+ 1	582	— 2
Bridges	740	— 9	1,152	0	772	+45
Highways and streets	2,858	+ 2	6,012	+13	3,105	+21
Earthwork, dams, waterways	652	—15	748	—21	811	— 1
Airports	730	—20	966	—11	834	—11
Unclassified	775	—10	921	— 2	1,021	+51
Federal (included above)	1,241	—13	1,664	— 9	1,332	—12
TOTAL BUILDING	4,099	+ 4	6,819	+ 6	8,611	— 2
Industrial	1,318	—11	2,047	— 2	2,292	—23
Mass housing, commercial public	2,875	— 4	4,792	+10	6,319	+ 9
Housing	1,021	+13	1,330	+11	2,243	+18
Schools	1,091	+10	1,465	+10	1,410	+23
Offices, private	249	+32	312	+42	577	+14
Offices, public	66	—33	74	—30	163	— 9
Shopping centers, stores	271	— 1	365	+10	527	+ 9
Public, industrial, military and atomic energy	186	—23	213	—26	219	—49
Other buildings: private	549	+20	606	+20	641	+17
Other buildings: public	368	+ 4	407	+ 4	539	+ 9
Federal (included above)	305	—18	210	—43	394	—54

than \$1 million has increased slightly or held steady from year to year.

The 1960 count of contractors doing at least \$100,000—regard-

Continued on page 54

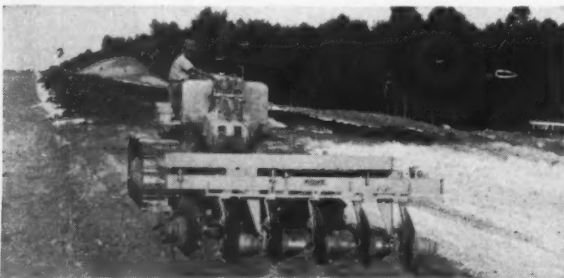
BUILD HIGHWAYS THE ROME WAY



CLEARING RIGHT-OF-WAY. Rome K/G Clearing Blade shears off trees and brush, cuts stumps out below ground, then piles cut trees and stumps for clean burning.



AERATING. Rome Model TRH 20-30 Hinge Type Offset weighs over 9,000 lbs.—heavy duty construction for less maintenance, longer life.



MIXING AND BLENDING. Rome Model TRCH 10-36 Hinge Type Offset Disk Plowing Harrow cuts up to 13" deep for low cost mixing, blending, bonding lifts.

TOUGH, VERSATILE AND MONEY SAVING. Rome Disk Plowing Harrows are available in many sizes and types. For aerating, mixing, scarifying, pulverizing—there's a ROME for your job, your equipment. See your Rome-Caterpillar dealer.

ROME

ROME FLOW
COMPANY
Cedartown, Georgia



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6113

How to get deepest penetration of granular materials

The answer is *vibration*—4200 three-ton blows per minute from the sturdy, rubber-mounted shoes of a GALION VIBRATORY COMPACTOR. Nothing else is so efficient in compacting granular base materials, because nothing else can “shake down” particles far below ground level—yet leave a smooth, flat surface.

Use this compactor with a GALION 3-WHEEL ROLLER for a time-saving combination of static and vibratory compaction. Or mount it on a GALION 503 GRADER (see photo above) to spread, level and compact in *one operation*. Either way, you get double efficiency—save on man-hours and equipment costs.

Important features: Vibratory Compactor can be operated with roller or grader moving forward or reverse. Engine and generator can be used as auxiliary

lighting plant or for powering small tools. Individual compactor shoes can be detached, fitted with handle and used for compacting confined areas.



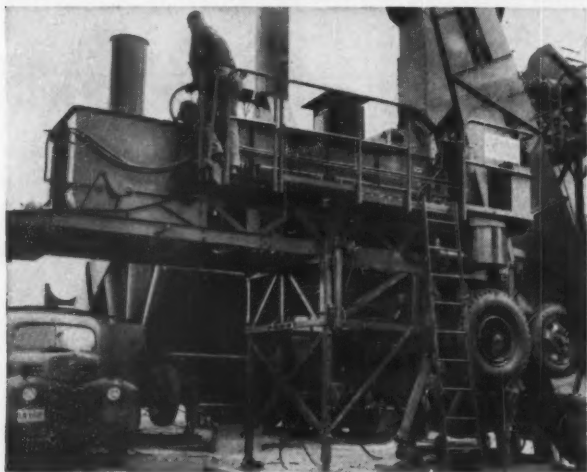
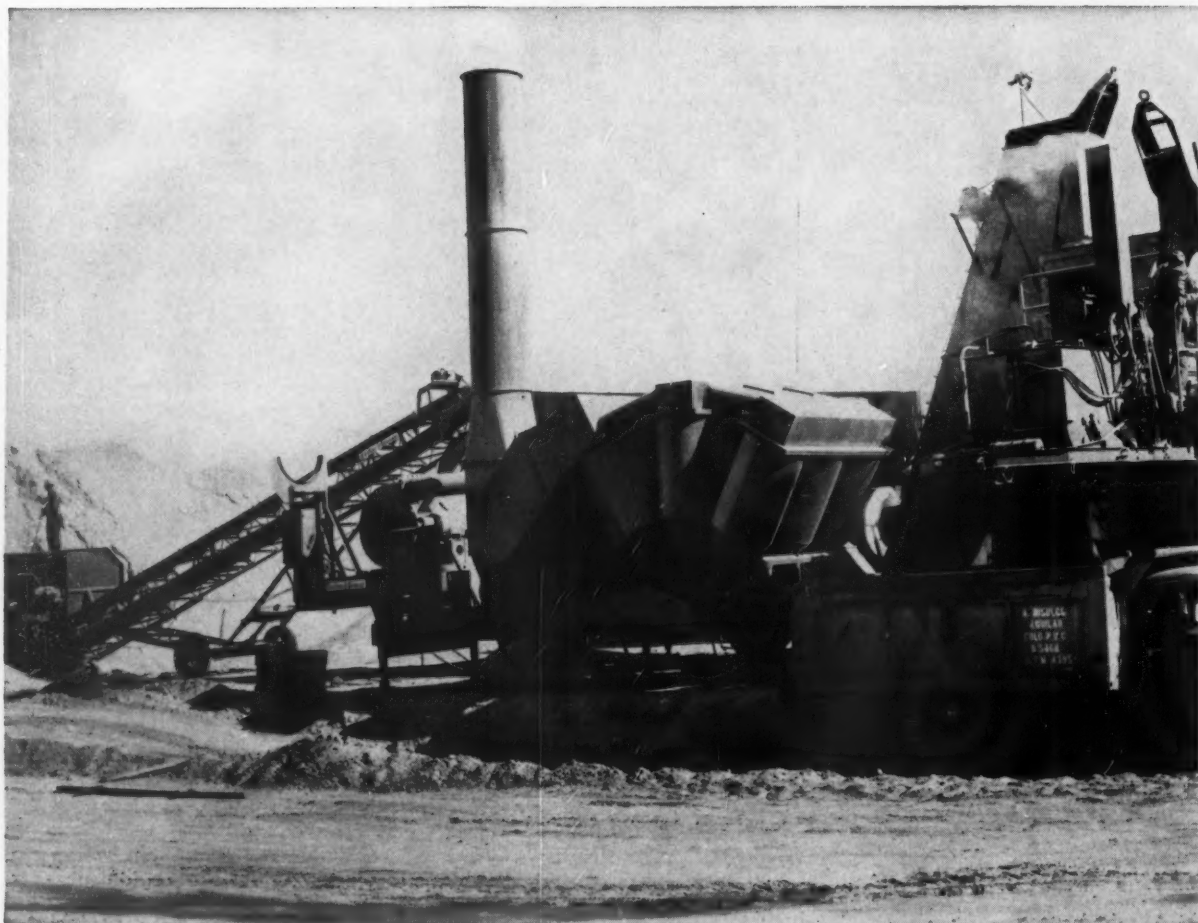
See your Gallon distributor for further information or write for literature.

THE GALION IRON WORKS & MFG. COMPANY, Galion, Ohio, U.S.A.

General and Export Offices, Galion, O., U.S.A., Cable Address, GALIONIRON, Galion, O.

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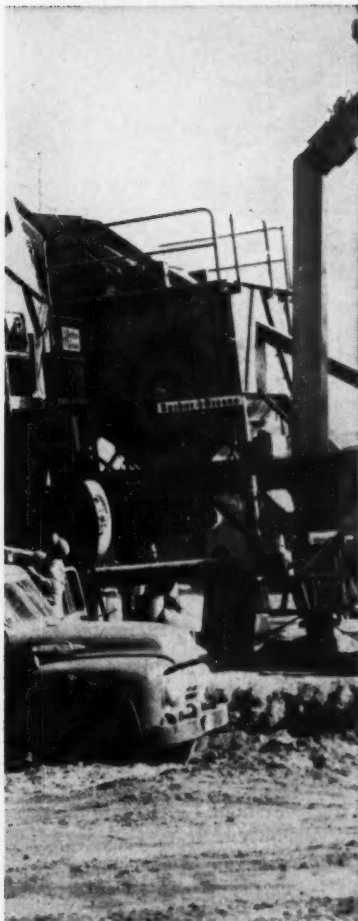
BEATS TOUGH DEADLINE WITH JOB-TO-JOB MOVES



HIGH CAPACITY of Leone's 848-A plant permitted supplying hot mix for two separate projects simultaneously. Domenic Leone's experience with Barber-Greene continuous type plants is best summed up by the maintenance record—over 700,000 tons of mix produced at a maintenance cost of 2¢ per ton. Plant is shown operating near Julesburg, Colorado, one of four locations required on the job.

UNMATCHED PORTABILITY of Leone plant permitted teardowns-moves-setups in as little as 11 working hours. Closeup shows wheel mounted units and individual hydraulic jacks with built-in leveling devices on components that cut moving time. Large pugmill, ductwork designed as integral part of plant components plus many other new compact component features all helped increase production and mobility.

275 T.P.H. CAPACITY, IN 11 HOURS



Colorado contractor licks tight schedule on scattered three-project, 64,270-ton contract with 275 t.p.h. average production, speedy teardowns and setups

To keep pace with multiple scattered jobs being let as single contracts, the Domenic Leone Construction Company, Inc. of Trinidad, Colorado:

- Purchased a new high-tonnage, quick-moving Barber-Greene 848-A Continuous asphalt plant.
- Successfully bid a contract that included three scattered paving projects located within a 50 mile radius.
- Beat the tight \$400,000 contract completion date by two full weeks.

Domenic Leone, a Colorado contractor since 1921, and son John report: "We didn't have enough capacity or portability to handle this type contract with a single plant until we got our new Barber-Greene 848-A. But this 848-A backed up our bid all the way. We averaged 275 tph for the entire total of 64,270 tons mixed and worked both our Barber-Greene finishers on different projects at the same time. And our crew reduced plant teardown-move-setup time to as little as 11 working hours during this three-job contract. That's why we wound up the job two weeks ahead of schedule."

Price Hargrove, plant superintendent, adds: "Getting needed high tonnage was easy with this all-electric, automatic plant with its high tonnage pugmill and king-sized dryer. And this baby was sure designed for fast moves with ductwork being integral with each unit, power integral with each unit, and individual hydraulic jacklegs with built-in leveling devices on plant components."

See your Barber-Greene Distributor for the asphalt plant that backs up those tight bids with high capacity lowest cost production.



NO. 1 FINISHER LINE includes: new SA-40 general duty model, shown; 879-B economy general duty model; compact 873; and heavy duty high capacity SA-60 and SB-60 models offering a choice of crawler or rubber tire mounting.

World's No. 1 Manufacturer of Asphalt Paving Equipment

Representatives in Principal Cities of the World

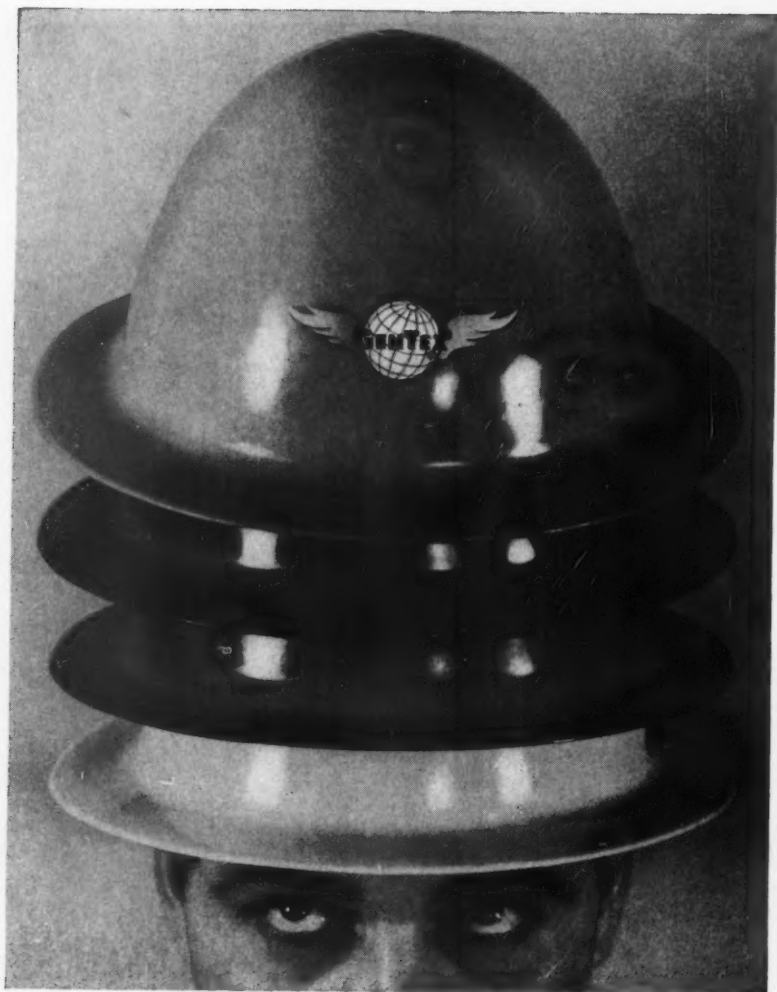
Barber-Greene



Main Office and Plant **AURORA, ILLINOIS, U. S. A.**
Other Plants: DeKalb, Milwaukee, Detroit, Canada, England, Brazil, Australia

CONVEYORS • LOADERS • DITCHERS
ASPHALT PAVING EQUIPMENT

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wearing a GenTex is like wearing 4 hats!

Why? Because just one GenTex Safety Hat is built to give:

- Impact Resistance**—protection at better than 40 foot-pounds.
- Penetration Resistance**—less than 1/4" penetration.
- Dielectric Resistance**—shock protection up to 25,000 volts.
- All Day Comfort**—headband has 6 point suspension system (same principle in Jet Pilot helmets), ends quitting time fatigue. Choose from 9 colors impregnated right in the lightweight shell for good looks and instant job classification. Headband snaps in, has fingertip control and is fully washable. Brim and peaked cap models. For full particulars write the GenTex Corporation, 450 7th Avenue, New York 1.

GENTEX® SAFETY HATS
another quality product
by the GenTex Corporation
Circle 54 on Reader Service Card

CONSTRUCTION BUSINESS..

continued from page 50

less of which bracket they fall into—also set a record last year (CM&E, July, p. 42). Their number rose 3% to 10,234. Contractors in this category did 6% more in dollar volume and had 5% more projects than in 1959 (see table on p. 50).

During the past 10 yr, dollar volume climbed considerably, but there have been fewer projects per contractor. This resulted in a highly competitive race for available new work (see chart on p. 50).

SOME BIG CONTRACT AWARDS OF THE MONTH

Walter Kidde Constructors, Inc., New York, N.Y. Office building at Wenga Farm, New Castle, N.Y. International Business Machines Corp. Estimated price, \$5 million.

Henry George & Son, Spokane, Wash. Low bidder for hospital at Fort Harrison, Mont. Veterans Administration, Washington, D.C. \$3,975,000.

Griffith Co., Los Angeles, Calif. Low bidder for 4.8-mi stretch of eight-lane highway on San Diego Freeway, Los Angeles. California State Div. of Highways, Los Angeles. \$10,987,901.

Foster-Newman Contracting Co., Inc., Brooklyn, N.Y. and **Rosoff Brothers, Inc.**, New York, N.Y. Low bidder for office building in Albany. State Dept. of Public Works, Albany. \$7,227,000.

Match Brothers and M.M. Sundt Construction Co., Lompoc, Calif. Phase 2 of training facility at Vandenberg Air Force Base, Lompoc. Corps of Engineers, Los Angeles. \$6,164,291.

Sam W. Emerson Co., Cleveland, Ohio. Plant addition at Cleveland. Addressograph-Multigraph Corp., Cleveland. Estimated total cost, \$3.5 million.

Foley Brothers and Holland Construction Co., St. Paul, Minn. Seedskadee project, Fontenelle Dam, La Barge, Wyo. Bureau of Reclamation, Dept. of Interior, Rock Springs, Wyo. \$7,917,170.

(continued on page 58)

only genuine Timken-Detroit®
REPLACEMENT PARTS



**MATCH THE
QUALITY
OF ORIGINAL
EQUIPMENT
AND ARE AVAILABLE EVERYWHERE!**

You bought the best—replace with the best. Because they are manufactured to the same rigid engineering specifications as the original equipment and carry the same manufacturer's guarantee, Timken-Detroit replacement parts save you time, money and trouble. Extra machining or fitting operations are eliminated. Labor and adjustment costs are cut to a minimum. Parts take less time to install.

Authorized vehicle dealers are located everywhere. They can supply you with Timken-Detroit replacement parts quickly and expertly.

Another Product of...

ROCKWELL-STANDARD
CORPORATION

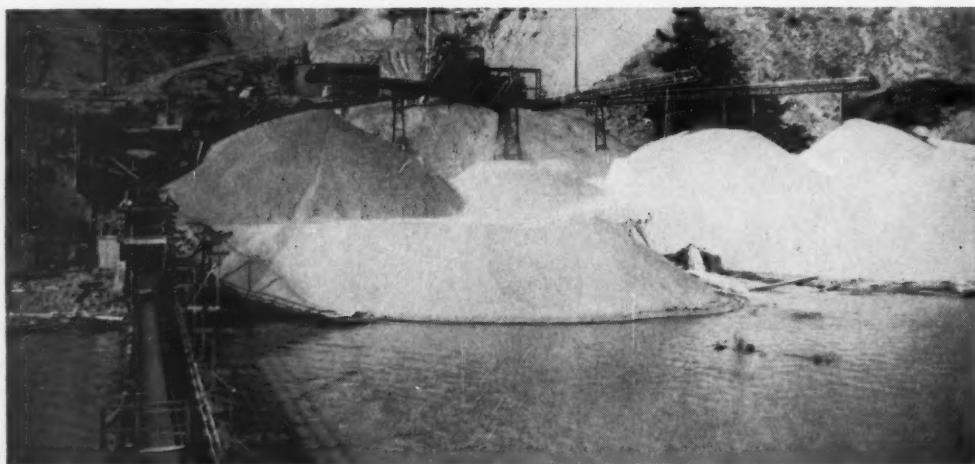
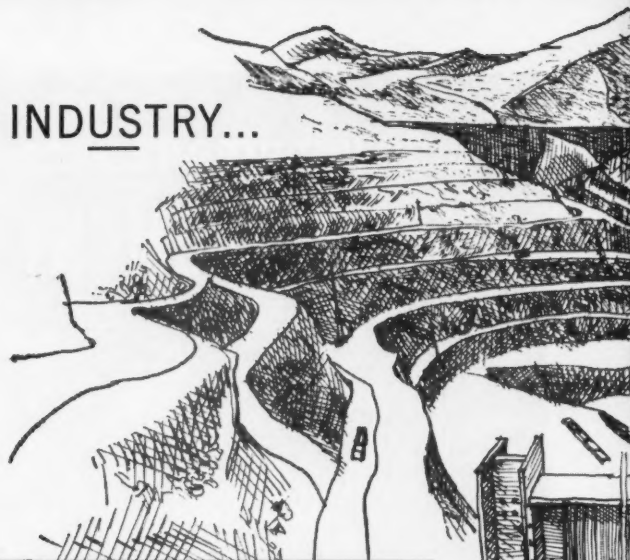


Transmission and Axle Division, Detroit 32, Michigan

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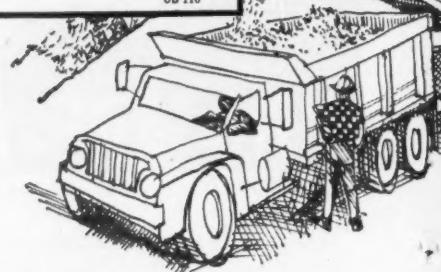


AT THE HEART OF INDUSTRY...



Their **US-designed Conveyor Belt system** made conveying sand and gravel for a Pacific Northwest breakwater possible where handling costs normally would have been prohibitive. All belts in the system more than fulfilled expectations in conveying thousands of tons to complete the breakwater, are continuing to carry sand and gravel to service a 75-mile area.

CB 110



Wherever you see the “hard-hat” of the mining or construction man, you’ll find US Industrial Rubber Products helping make jobs easier, faster, more profitable. As the world’s largest producer of Industrial Rubber Products, US fills the needs of mining and construction men everywhere.



Where men and hose flex their muscles, you'll find U.S. 4810 Air Hose in the thick of the work. On the really tough jobs—where tight quarters, abrasive terrain and high working pressures take their toll of ordinary air hose—U.S. 4810 stands up to use and abuse. And despite its great strength, this hose is easy to handle, readily flexible, less expensive.

H 120



Moving the oil that moves a nation . . . unwatched and unfailing . . . U.S. Royal V-Belts power well pumps throughout the "oil patch." Working constantly, often unattended for weeks at a time, they retain their exceptional length stability and smooth-running characteristics despite the worst that weather can offer. Such reliability is built into every U.S. Royal V-Belt for every industrial need.

VB 103



New U.S. SlurryKing takes loads up steeper grades, stops avalanching, even carries the fluid portion of slurries along with the solids. This belt lets you drain or retain fluids in slurries by merely changing conveyor and idler roller angles. SlurryKing's tough cover resists the severe abrasion of both wet and dry materials to retain the belt's hill-climbing ability indefinitely.

CB 121

For every industrial rubber product need, turn to US. For Conveyor Belts, V-Belts, the original PowerGrip "Timing"® Belt, Flexible Couplings, Mountings, Fenders, Hose and Packings . . . custom-designed rubber products of every de-

scription. Discover why U.S. Rubber has become the largest developer and producer of industrial rubber products in the world. See your U.S. Rubber Distributor or contact US directly at Rockefeller Center, New York 20, N. Y.

WORLD'S LARGEST MANUFACTURER
OF INDUSTRIAL RUBBER PRODUCTS



United States Rubber

MECHANICAL GOODS DIVISION

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Quick facts on America's first tower crane

the BUCYRUS-ERIE MARK I-50



Reaches Over
a 14-story building.

Cuts Cost
of construction 20 to 40
percent.

Eliminates
concrete buggies, runways,
elevators, and the need of
rehandling material from
pickup to delivery.

Speeds Up
construction as much as 33 per-
cent on large buildings.

Moves Up
with the job. Operator's cab moves
up the tower as structure grows.
Keeps work at eye level for safe,
accurate handling.

We can't say the new Mark I-50
will pay for itself on your first job,
but we wouldn't be too surprised.
It has happened with others.

We can say this: You have
never seen anything like it for
efficient performance on high-rise
building projects — unless you've
seen the Mark I-50 itself. Let us
send you the complete details.
Bucyrus-Erie Company, South
Milwaukee, Wisconsin.

2761

**BUCYRUS
ERIE**

most respected name in the field

CONTRACTS AWARDED . . .

continued from page 54

General Construction Co., Seattle
Wash. Interceptor sewer at Ren-
ton Treatment Plant, Seattle.
Municipality of Metropolitan
Seattle. \$6,181,000.

Community Builders, Inc., Wash-
ington, D.C. Capehart housing, Ft.
Meade, Md. Corps of Engineers,
Baltimore. \$5,218,000.

**Winston Bros. Co. and Green Con-
struction Co.**, Arcadia, Calif. For
5.6-mi freeway, Route 60, River-
side, Calif. California State Dept.
of Public Works, Sacramento.
\$4,857,329.

Gull Contracting Co., Inc., Flush-
ing, N.Y. Brooklyn-Queens ex-
pressway. President of Queens
Boro, Kew Gardens, N.Y. \$4,284,-
078.

Paul Hardeman, Inc., Stanton,
Calif. Low bid on launch complex
2, Naval Missile Facility, Point
Arguello, Calif. Eleventh Naval
District Public Works Office, San
Diego, Calif. \$8,909,581.

Al Johnson Construction Co.,
Minneapolis, Minn. Lock at Ope-
kiska Lock and Dam near Morg-
antown, W. Va. Corps of Engi-
neers, Pittsburgh, Pa. \$9,641,317.

U.S. Steel Corp., New York, N.Y.
Low bid on Narrows Bridge. Tri-
borough Bridge & Tunnel Au-
thority, Randall's Island, N.Y.
\$36,649,577.

John McShain Inc., Philadelphia,
Pa. Hospital and medical clinic,
Washington, D.C. Veterans Ad-
ministration, Washington, D.C.
\$17,422,000.

Frank Messer and Sons, Inc., Cin-
cinnati, Ohio. Low bid on new
building of Union Central Life In-
surance Co., Cincinnati. \$7,303,-
300.

R. B. Ball Construction Co., San
Antonio, Tex. Low bid on Wil-
liam J. Guste Housing, New Or-
leans, La. Housing Authority,
New Orleans. \$8,650,000.

Paul Hardeman, Inc., Stanton,
Calif., and **Fischbach & Moore**,
Dallas, Tex. Low bid on Phase 2
Titan II missile launch facilities
near Little Rock, Ark. Corps of
Engineers, Los Angeles, Calif.
\$37,700,000.



Together, fellow fasteners, we can build an empire!

There are 125 different kinds of us, all strong and true and ready to carry our share of the load! We're powder-actuated and we mean business. We have threaded studs and drive pins (super-nails!). There's tall ones, short ones, in-between ones; there's fat ones and there's lean ones. Every last one of us can ram home into steel and concrete with ease. One every *fifteen seconds*. We can attach things down on, up against and suspended from. With our eyepins the Hanging Gardens of

Babylon would still be hanging! We're the kingpins. We're the elite. We're austempered, to a man. A tougher group you'll never find. So give us a chance, that's all. Give us a chance and by the George Washington Bridge we'll build you an empire!

Our dealers are assistant empire-builders, but they're listed in The Yellow Pages under TOOLS. Talk to them about *your* empire. (Among other things, they'll tell you why we have red tips.)

Ramset®
Clin

281-H Winchester Ave., New Haven 4, Conn. WINCHESTER-WESTERN DIVISION

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EATON

PDR PLANETARY DOUBLE REDUCTION AXLES



- ❶ **FIRST REDUCTION**
in bevel gears
- ❷ **SECOND REDUCTION**
in planetary gears

Eaton PDR Axles have established outstanding performance records in all types of heavy-duty operation. By actual comparison, they cost less to buy, less to maintain.

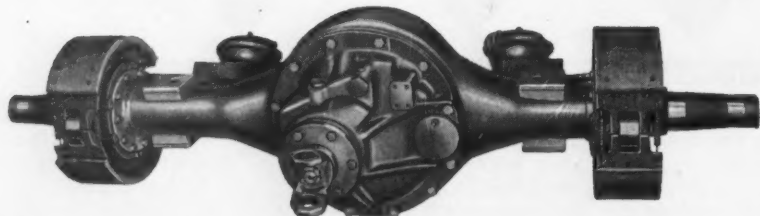
Ask your truck dealer for complete information about Eaton PDR Axles.

**SAVE WEIGHT
LAST LONGER
REDUCE MAINTENANCE**

Because Eaton PDR Axles weigh less (size for size) than conventional herringbone or spur gear axles, PDR-equipped trucks haul more legal payload.

Two exclusive Eaton design features contribute to materially longer axle life: Gear tooth loads are distributed over four rugged "planet" gears, reducing stress and wear; the Eaton forced-flow lubricating system provides positive lubrication to all moving parts, even at slowest vehicle speeds.

Simple construction—similar to the famous Eaton 2-Speed Axle which is familiar to all truck servicemen—holds maintenance cost to a minimum. Repair parts are readily available—many of them interchangeable with other Eaton Axles.



More than
Two Million Eaton Axles
in Trucks Today

EATON

**AXLE DIVISION
MANUFACTURING COMPANY
CLEVELAND 10, OHIO**

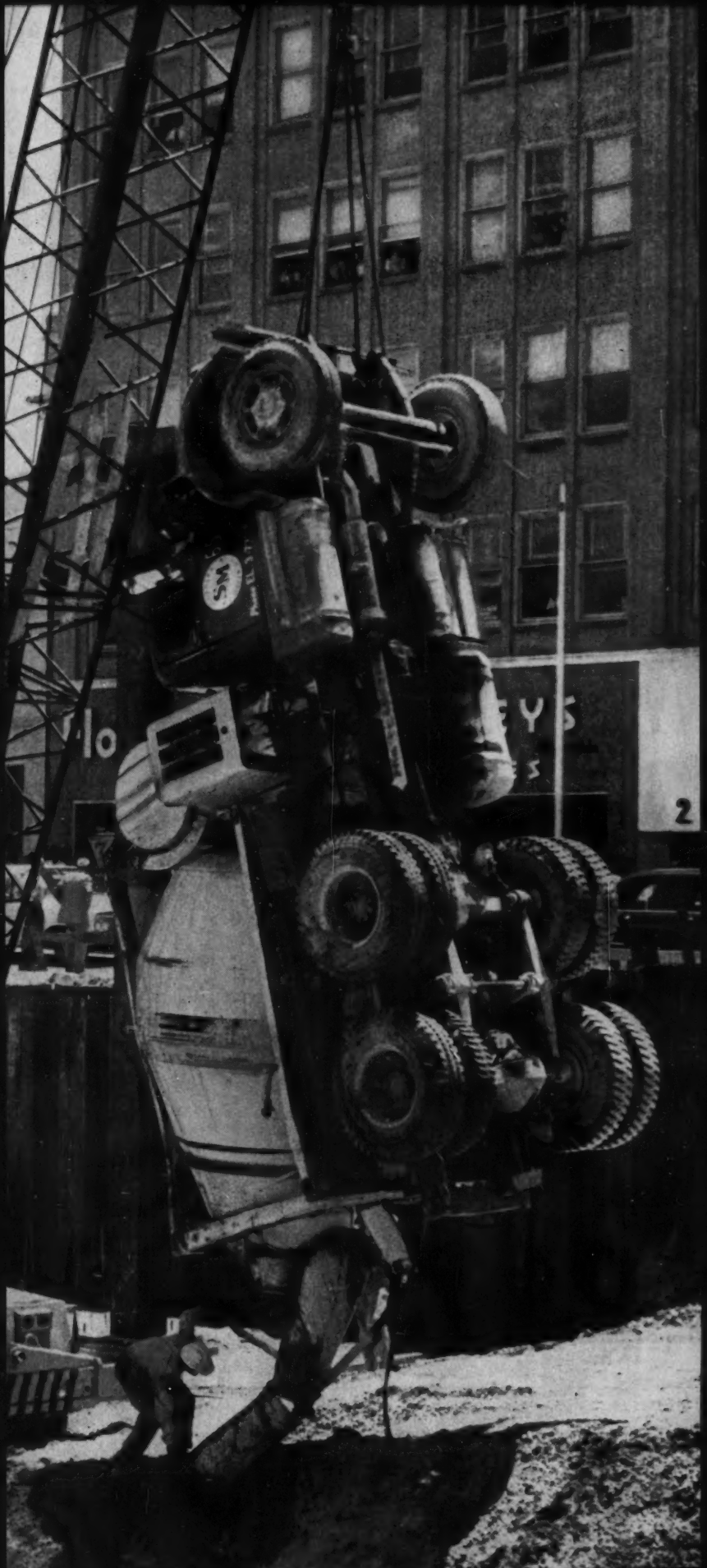
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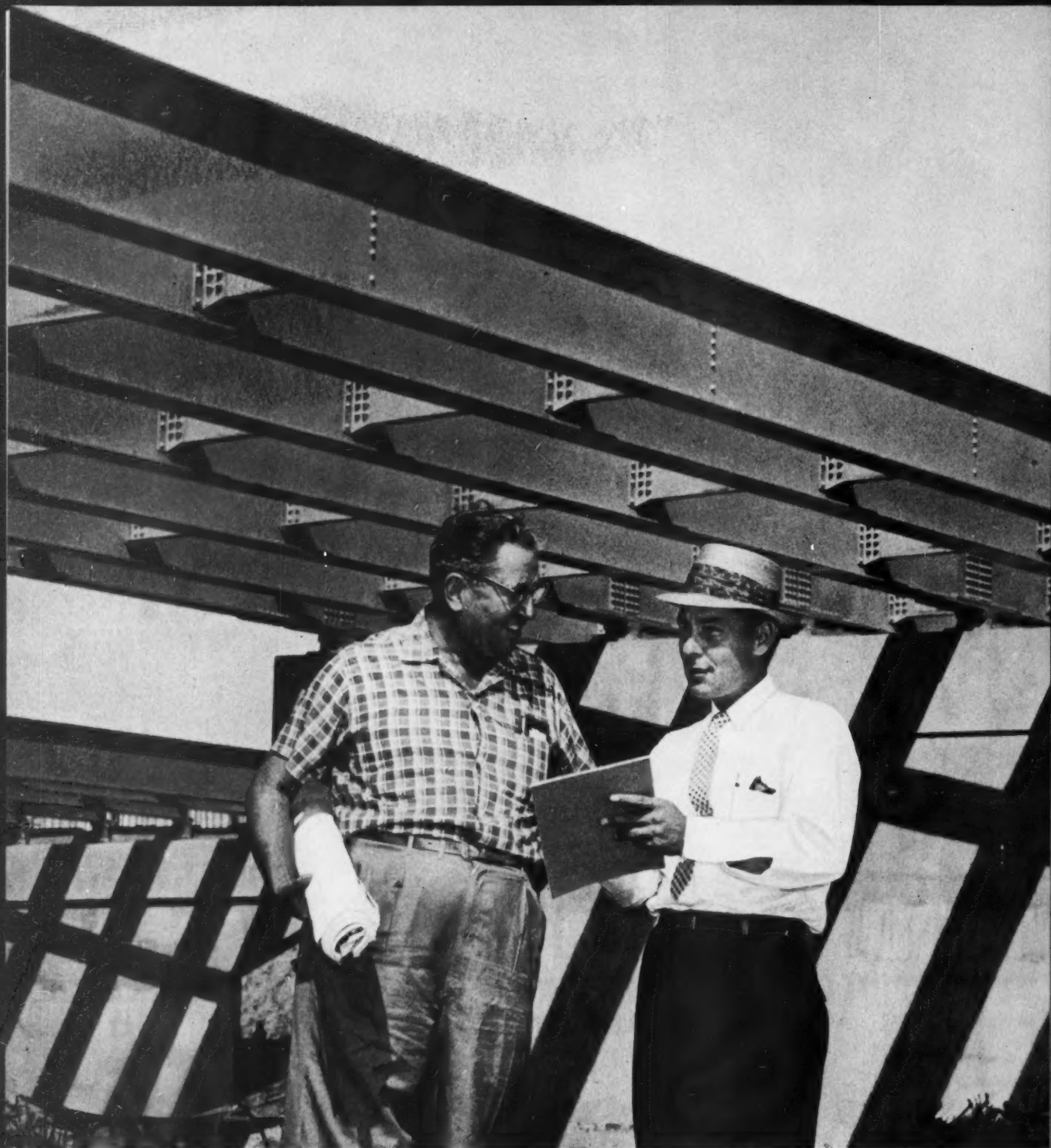
CONSTRUCTION
METHODS
**PICTURE
OF THE
MONTH**



**Good
To the Last
Drop**

See Methods Memo, P. 194





An important Rieth-Riley project is the construction near Indianapolis of five bridges at the intersection of U.S. 52, Interstate 465 and Bypass 100. Here Miles Shookman checks service and delivery requirements with bridge superintendent H. P. Kunkler.



BY MILES SHOOKMAN
About the Author. Operating out of Indianapolis, Miles Shookman has the job of providing specialized service to construction contractors in his territory. A graduate of Indiana University, Miles is well qualified for this important assignment. He has been doing this work for much of the 15 years he's been with the company, and also at-

tended the Company's Sales Engineering School.

★ ★ ★

Rieth-Riley Construction Company, Inc., is a large, highly diversified contracting firm with headquarters in Goshen, Indiana. As "Contractor Representative" for American Oil Company, I work closely with Rieth-Riley to provide the specialized service needed for construction operations. This means visiting widely scattered

projects to make sure the company gets the right product in the right place at the right time—*always*. Specializing in highway, bridge and street projects, Rieth-Riley owns and operates a large number of complicated and expensive pieces of equipment. Years of experience has taught the importance of uniform maintenance practices and consolidated fuels and lubrication programs. That's why Rieth-Riley depends on American Oil.



This is
AMERICAN OIL COMPANY
in action

CONSTRUCTION COMPANY GETS DEPENDABLE PRODUCTS AND FAST TECHNICAL HELP

WITH AMERICAN
SPECIALIZED SERVICE



Rieth-Riley's president, Blair Rieth and general superintendent Harold Bowen review highway construction progress and servicing requirements with AMERICAN's Miles Shookman.

No matter what the fuel or lubrication need, or where it is needed, there is an AMERICAN product to do the job.

As for service, my assignment—for example—is devoted exclusively to serving construction firms in my area with the best products, prompt service and dependable technical help.

★ ★ ★

For the same kind of service contact the American Oil Company office.

Rieth-Riley Construction Company, Inc., Depends on These AMERICAN Products

*AMERICAN® PREMIER® Diesel Fuel
AMERICAN® Regular Gasoline
AMERICAN® S-1 Motor Oil
AMERICAN® S-3 Motor Oil
AMERICAN® Multi-Purpose Gear Lubricant
AMOCO® Lithium Multi-Purpose Grease
Asphalt

*Not available in Texas



AMERICAN OIL COMPANY

910 SOUTH MICHIGAN AVENUE
CHICAGO 80, ILLINOIS

Circle 63 on Reader Service Card

Construction 'Round the World

In Germany

This 190-ft railroad bridge was pre-assembled in three sections on steel falsework and then rolled to the site to avoid interference with traffic on a busy highway in Frankfurt. Bridge builders jacked the structure to the correct height, then winched it into place between two abutments. The jacking and winching operation took about a month.



In The Netherlands

This giant 250-ton gantry will handle erection of 1,100 prestressed concrete beams for the sluice system of a dam on the North Sea. Designed and built by Holland Cranes of the Hague, the electric-powered gantry stands 150 ft high and spans 246 ft. It is equipped with two 125-ton crabs and its trestles travel on rails over a distance of nearly 1 mi.



In Liberia

A fleet of Caterpillar tractor-drawn scrapers roll down the right-of-way of a 165-mi railroad being built to carry ore from a new iron mine in Liberia's remote mountains. Raymond International Liberia Ltd. holds contracts totalling \$43 million in connection with the development. The railroad calls for a total of about 19,000,000 yd of excavation.



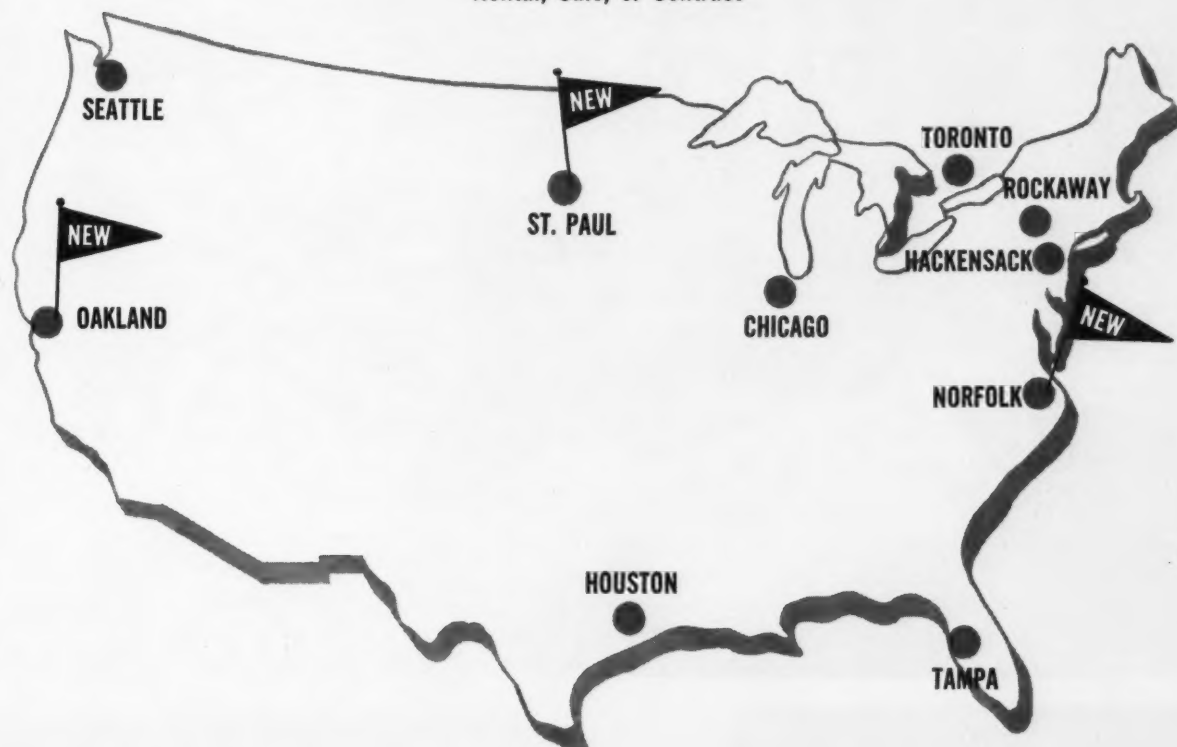
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P.O. Box 7581 Norfolk 15, Virginia NORfolk 487-0551	4765 North Highway #8 St. Paul 12, Minnesota MEIrose 3-6393	7701 Interbay Blvd. Tampa 9, Florida TAMpa 61-1871	WESTERN REPRESENTATIVE: Pacific Pumping Company 9201 San Leandro St. Oakland 4, California	BRAZILIAN REPRESENTATIVE: Oscar Taves & Co., Ltd. Rio de Janeiro

EXECUTIVE OFFICES AND PLANT: Rockaway, N. J.
Circle 65 on Reader Service Card

EIGHT TESTED—LORAIN



Two Lorain Moto-Loaders, Model ML-309, with 9000 lbs. operating capacity, are shown loading shot rock at the quarry face. One is equipped with a 3-yd. bucket, the other with a 4-yd. bucket.

Mr. Robert A. Silvernail, Superintendent, describes the Best operation as a quarry and a processing plant where the rock is processed, dried, sorted and graded for the market, plus a concrete block plant known as Bestone Inc.

MOTO-LOADERS® CHOSEN

Walter C. Best Inc. at Chardon, Ohio, tested eight different makes of front end loaders, including Lorains, in their quarry. After several thousand hours of carefully documented, on-the-job operation in 1960, they unhesitatingly chose Lorain Moto-Loaders. Two Lorain Moto-Loaders ML-309 have been handling all the production on this operation since January 1961 without a single hour of down time. Much of the 200,000-ton yearly output of silica sand and aggregate is handled 2 or 3 times.

Replaces 8 pieces of other equipment

The two Moto-Loaders replaced a whole fleet of other types of equipment and made it possible for Best to revise completely their production procedures.

Less than half the capital needed

Because less equipment is needed, less capital investment is required. Best claims they reduced their capital needs by more than 50% by turning to the Moto-Loader method.

Man-hours reduced 75%

Labor costs went down drastically after the Moto-Loaders were installed. Man-hours were reduced from 120 to 30 a day.

Down time eliminated

Robert A. Silvernail, Best's Superintendent, says, "The rugged dependability of these units saves us hundreds of dollars in down time a year. They simply do not break down, and maintenance is confined to lubrication and oil changes. This can spell the difference between profit and loss on many an operation. *There has been no down time for any other reason.*"

Versatility is invaluable

Mr. Silvernail continues, "We don't believe there is anything these Moto-Loaders can't do. They have loaded trucks with the shot rock, stockpiled materials, stripped overburden, cleaned out a swamp, moved a 2-ft. layer of rock to grade for a road, dug excavations, moved trees and heavy machinery, cleared snow, pushed and towed trucks and railroad cars, charged bins and substituted for winches. You name it and Moto-Loaders do it for us. They are invaluable. Either machine is ready at any time to do the work of four

different ones, at four different places and you know that this kind of versatility makes them pay and is saving you money."

One Moto-Loader double-shifted

During eight months of the test period one Moto-Loader was double shifted for a total of 2300 hours of service and loaded out 100,000 tons of stockpiled material to trucks in that period.

Moto-Loaders balance important—Drivers find them less tiring

The balance of power, weight and control contributes heavily to the performance of these Lorains. "The ML-309's are splendidly balanced, even at full load, which makes them easy to operate. The drivers find them less tiring, and this contributes to the men's efficiency and safety on the job," is the way Mr. Silvernail puts it.

Other features, too

To get the kind of dependable, cost-cutting performance experienced by Best requires many advanced design, construction and operating features. You don't out-perform seven other top brands of loaders without real, solid reasons. Here are some of them.

One-foot control. Control of selection of forward and reverse and acceleration is done with just one foot. Both hands free for steering and other controls.

Four-speed, full-power shift gives continuous straight-through, full-power shifting from 1 to 4 without stopping for selection. This Lorain Moto-Matic Transmission, plus torque converter speeds up cycles.

"Safety" arms, S-shaped for greater reach, provide full side visibility at all times. The bottom edges stay below cockpit sides at all times for complete safety.

Better tractive effort is obtained through 4-wheel drive using planetary axles with high traction differentials. Torque is kept at the ground where it belongs.

Want to know more? Why not see your nearby Moto-Loader dealer for all the reasons? Or arrange a demonstration so you can see for yourself what a Lorain Moto-Loader can do. You'll be glad you did.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN®
DOES MORE
FASTER • FOR LESS

PLANTS in Lorain and Elyria, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawlers from $\frac{3}{8}$ - to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6,000-lb., 7,000-lb., and 9,000-lb. operating capacities.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

Construction News in Pictures . . .



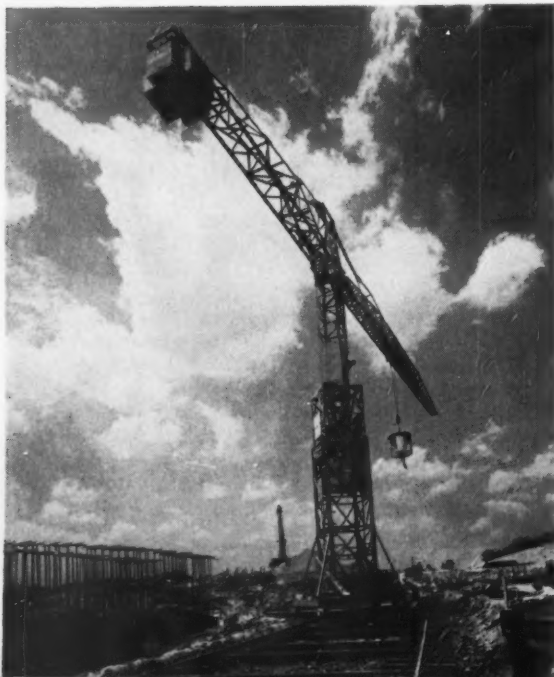
Going Up 60 Stories

Scheduled to rise 60 stories with the tower of Chicago's Marina City apartments, this tower crane has a 92-ft boom that swings 360 deg to service the circumference of the building. Hydraulic jacks inside the core will raise the crane floor by floor as construction progresses. The central tower, one of two, rests on concrete caissons set 110 ft deep (CM & E, May, p. 90). McHugh Construction Co. and Brighton Construction Co. use the Danish-designed Heede crane.



Heavy Earthmoving

An estimated 1½ million cu yd of excavation is being moved by International Paywagons in the construction of four interchanges on a Kingston, N.Y., highway by-pass. Eight of the Paywagons, which have a struck capacity of 27 yd and a heaped limit of 40.5 yd, are moving hard shale material nearly a mile for ramp construction on the Route 28 interchange. Terrain along the 3½-mi section requires 100-ft cuts and 25-ft fills. Contractor John Arborio, Inc., Poughkeepsie, N.Y., started the project in October 1960 and expects to finish in July, 1962. The project begins at Route 28, in the western sector of Kingston.



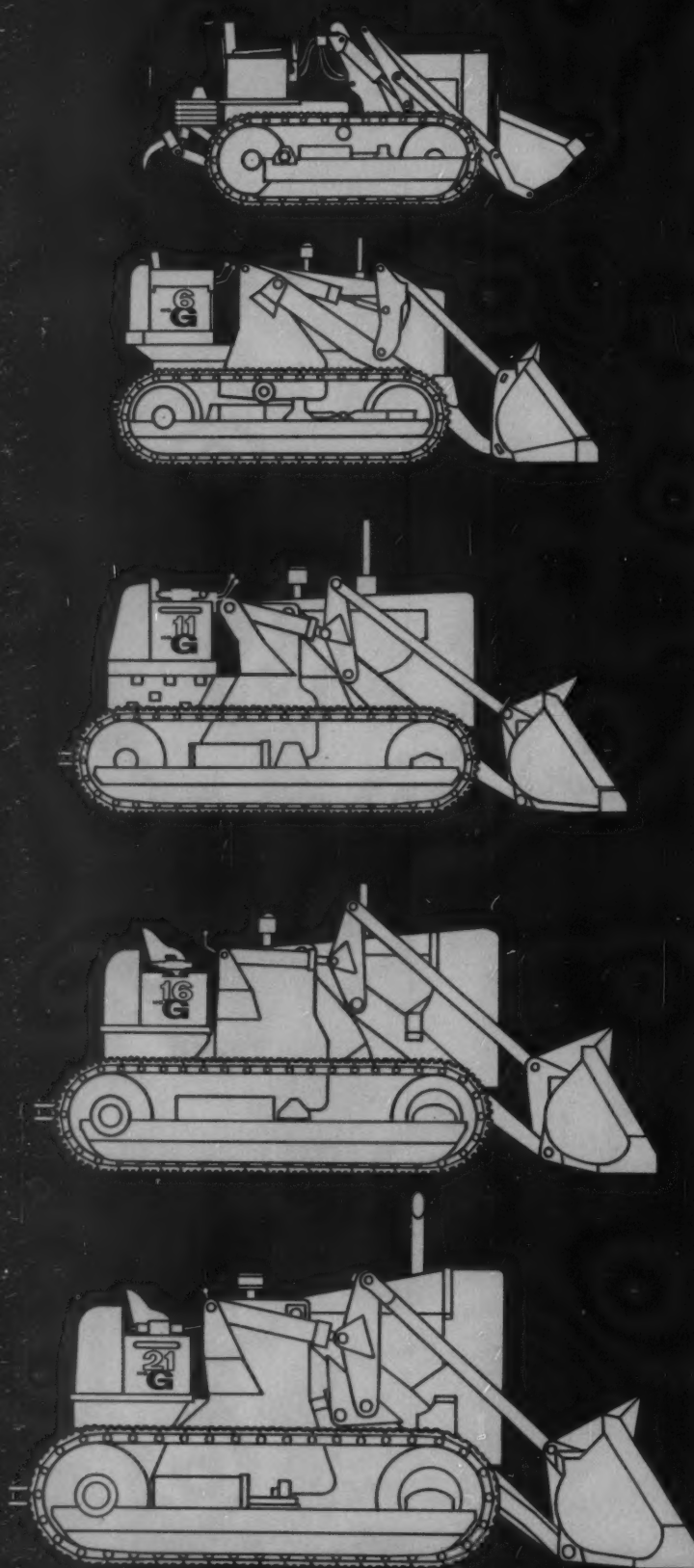
French Rig in Detroit

The Mayco-Weitz telescoping tower crane shown left is mounted on steel rails for work at Detroit's 70-acre Allen Park water filtration plant project. It moves under its own power to deliver concrete and reinforcing steel into various parts of the project not readily accessible to trucks, conventional cranes or concrete buggies. In photo, the 43-ton crane is working at a height of 55 ft. The rig can work at 328 ft by adding tower sections. The boom is 98 ft long and can turn 360 deg. It will carry 5,000 lb at full radius. The contractor is Barton-Malow Co. of Detroit, Mich.

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L

4

8



ALLIS-C

The line t
the widest ch

in POWER

in CAPACITY

in ATTACHMENTS

in OVER-ALL VALUE

Turn to the following pages
for FACTS on how

-CHALMERS

e that offers you
choice in the industry

Choose the power that's right for your work from an outstanding line of tractor shovels ranging from 40 to 225 hp. In every unit, you'll get clean combustion, efficient power, low fuel consumption, with modern Allis-Chalmers diesel engines designed specifically for heavy-duty shovel service.

Select from a range of buckets from $\frac{3}{4}$ to $7\frac{1}{4}$ yd . . . lifting capacities up to 40,000 lb.

Timesaving, production-boosting attachments tailor your Allis-Chalmers tractor shovels to specialized applications. A wide variety is available including rock, slag and light materials buckets; rock forks; straight and angle dozers; lift tongs and forks; pulpwood loaders; crane hooks; side booms and back hoes.

Here is the outstanding value line in the industry. Compare size, weight, horsepower, features, and your choice will be Allis-Chalmers. Regardless of which of these tractor shovels you choose, the built-in quality insures you of top performance on your jobs at lowest possible cost.

how you can Step Up Your

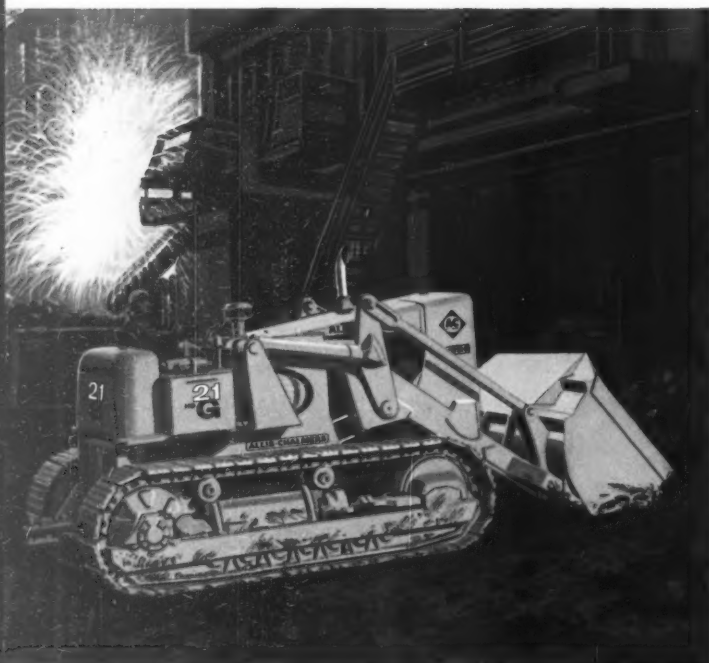


Now! Five ALLIS-CHALMERS tractors

225-hp 4-YD HD-21G

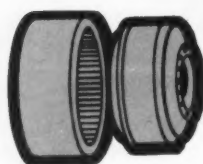
Both feature the "industry's healthiest engines" — the 21000 and 16000 . . . torque converter drives . . . power-operated oil steering clutches and oil-cooled "POWER" brakes. Transmissions in both units are pressure-lubricated with continuously filtered oil. You get capacity available in no other tractor shovels, plus proven fuel economy and improvements designed to extend service life while reducing maintenance requirements.

150-hp 3-YD HD-16G



steel mill stamina now standard on HD-21G

Allis-Chalmers engineers worked with steel mill men to design a tractor shovel that could perform well in the extreme heat and other torturous conditions encountered on slag removal work. The result was a bigger, tougher HD-21G. This new machine is more than two tons heavier than its predecessor. Here's a machine that will withstand the tortures of steel mill service . . . it will certainly amaze you with its ability to produce a tremendous volume of work on your regular big-shovel jobs . . . no matter how tough they may be.



NOW! a major design advance

New oil steering clutches and oil-cooled power brakes on the HD-21G and HD-16G give you new standards of performance . . . new peace of mind regarding maintenance and service life. Both clutches and brakes run in a complete bath of oil so heat is dissipated with extreme efficiency, giving you exceptionally long life with minimum brake adjustment . . . no clutch adjustment. New power steering and power brakes reduce operator effort, fatigue . . . help him maintain maximum production all day.

shovels to match your job requirements

111-hp 2¹/₄-YD HD-11G

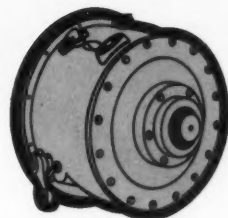
Both the HD-6G and the HD-11G feature the *fuel-sipping*, high-efficiency engines, counterparts of the 16000 and 21000, that reduce fuel consumption up to 27 percent over ordinary diesels. Both are available with your choice of oil or conventional dry-type master clutch. The HD-11G has power-boosted hydraulic steering and your choice of torque converter or all-gear drive. Both units are equipped with track-guiding truck wheel guards to protect vital track parts . . . extend life.

72-hp 1¹/₂-YD HD-6G

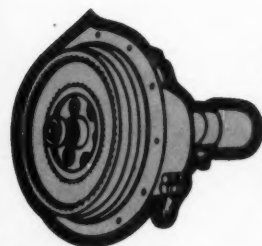
NEW 3³/₄-YD HD-3 40-hp diesel engine H-3 43-hp gasoline engine



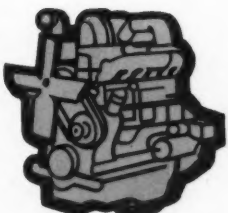
Power-boosted hydraulic steering clutches—with finger-tip, console-type levers are standard on the new HD-11G. The clutches are large-diameter, multiple-disc type with bi-metallic friction surfaces. Hydraulic-boosted controls provide easy operation.



Hydraulic torque converter or conventional all-gear drive can be specified on the new HD-11G. This torque converter's outstanding fluid transfer of power automatically matches tractor speed and power to load and terrain. Operators get much more work done with less effort . . . less fatigue. The hydraulic cushioning of the torque converter protects tractor components and equipment from shock and strain.



Oil master clutch is available in the HD-11G and the HD-6G. This Allis-Chalmers clutch is extra-heavy-duty with metallic-faced plates providing plenty of reserve capacity for cool operation, less wear, longer life. Both have independent oil reservoirs and filters.



10000 engine powers the HD-11G. The 6000 engine is featured in the HD-6G. Both are fast-starting, responsive, with high torque for top performance in today's tough service. They are open-chamber, controlled-combustion engines delivering high output without even breathing hard.

big performance in a compact package

Both of the 4-cylinder engines, 149-cu-in. gasoline and 175-cu-in. diesel, provide high torque with plenty of lugability for top performance at low cost.

Oil-type shuttle clutch lets you go forward or reverse simply by moving a single lever . . . no foot clutching or gear shifting necessary. Transmission has four gear speeds . . . forward and reverse. Select your working speed and work away simply by moving shuttle clutch lever back and forth.

Two buckets are available . . . 66-in., 3/4-yd and 60-in., 3/4-yd. The loader produces more than 8,000-lb break-out force . . . lifts 3,600-lb, 10-ft high.





**STEP UP
YOUR
TRACTOR
SHOVEL**

Performance
Operator comfort
Wearability
Ease of maintenance
Reliability



**WITH
ALLIS-CHALMERS**

Analyze the tractor shovel news on the following pages and see how you get the top value to which Allis-Chalmers is committed. This is the result of project "power"—a massive Allis-Chalmers research and development program that brings you the benefits of significant product improvements.

you get all the
BASIC
ADVANTAGES
that have made
Allis-Chalmers
the leader
in Tractor Shovels

In 1947, Allis-Chalmers introduced the first truly successful hydraulically controlled tractor shovel revealing entirely new concepts in earth moving and material handling. Called the HD-5G, it was engineered as a complete unit with the speed, strength and capacity to handle an infinite variety of excavating and loading jobs.

Through the years, Allis-Chalmers has increased this leadership as it improved and expanded its tractor shovel line to match modern job requirements. Recognized advantages, like tractor and shovel designed as a unit for exceptional strength and visibility . . . advanced linkage design for outstanding reach and stability . . . curved bottom bucket with big pry-out action . . . reflect the company's leadership. The ever-lengthening list of firsts in basic tractor features like torque converter drive, unit construction and extended lube intervals, are a few of the many reasons for the company's continuing reputation as the *house of quality*.

For digging and loading all materials at lower cost than ever before, go with the leader—Allis-Chalmers. Nothing matches its design quality, solid construction, operating ease and maintenance simplicity for lively, dependable performance.

Plus everything that's new
to step
up your



Your Allis-Chalmers dealer
 is in business to . . .

**PROTECT YOUR EQUIPMENT INVESTMENT
 WITH COMPLETE SERVICE**

When you invest in Allis-Chalmers equipment, you get top performance in *every respect*. Your Allis-Chalmers dealer is fully equipped to serve you completely, conveniently. Make him your single source for:

- **Complete Parts Service**—original-quality parts on hand to meet your requirements quickly.
- **Ready-to-go Exchange Assemblies**—completely reconditioned assemblies on call. Your trade-in assembly is rebuilt without overtime charges . . . your machine is back to work quickly. Your cost? Only parts and regular-time labor needed to recondition your old assembly.
- **Specialized Service—Shop or Field**—top-notch mechanics are factory-trained to service your needs efficiently in a fully equipped shop or on your job.
- **Tailored Financing**—terms suited exactly to the financial requirements of all your machinery needs.

From one convenient source, then, you get the complete service package—job application information, new and used equipment, parts, service and financing. Who could be more interested in backing you up than your dealer? That's his business!

Your every transaction in sales, parts, service and financing is fully backed and . . .

ALLIS-CHALMERS

POWER FOR A GROWING WORLD



"UNIT offers a buyer the most for his money"

H. E. STRUTHERS
ST. PETERSBURG, FLORIDA

This veteran excavating contractor speaks from profitable experience—he has owned five UNIT machines, and is currently running two ¾-yd. draglines. "I've been a consistent purchaser of UNIT machines," Mr. Struthers says, "because they offer a buyer the most for his money in regards to work capability, low cost of operation, and the great ease with which the machines can be lubricated and repaired."

There are many good reasons why a UNIT gives you more for your money. *Direct-in-line drive* from engine to main machinery is one. This simple, highly efficient power transmission system contributes substantially to a UNIT'S on-the-job performance by delivering power directly to the point of action with low friction loss.

UNIT'S *exclusive one-piece main machinery gear case* is another reason. All gears, shafts and bearings are sealed in this housing... operate continuously in oil... are positively protected against dirt and abrasives. Routine lubrication is easily handled with conveniently grouped fittings provided for all parts requiring greasing.

And, ready accessibility to main machinery makes your operator or mechanic more maintenance-minded... eases servicing. Convenient sliding side panels and easily lifted hood covers make it easy to get at various machinery parts. Broad platform walkways on both sides make it especially easy to service the machine.

For a full rundown on UNIT features, contact your nearby dealer now. He handles UNIT excavators in sizes from ½- to 1-yd., crawler cranes from 6- to 22-ton capacity, and 10- to 40-ton truck cranes.



UNIT
UNIT CRANE & SHOVEL CORP.

6305 W. Burnham Street
Milwaukee 19, Wisconsin

3061

Whether you are building a highway near Kansas City...



stripping coal in Ohio, or...



operating a quarry in Maryland...



if you are breaking rock,
you can do it cheaper, faster, more efficiently with...

EXPLOSIVES ENERGY

Now, through the reduced cost of blasting materials and the improved equipment and techniques for drilling, many profit-minded operators in all fields are using explosives energy to accomplish tasks formerly reserved for mechanical equipment. As a result they are realizing valuable savings on shovels, dozers, trucks, and total man-hours.

The photographs at the left illustrate just three examples of the many ways explosives energy is being used more fully, more efficiently. On a section of the Turkey Creek Expressway near Kansas City, the objective was maximum breakage and production on every shot. For this contractor, efficient use of explosives energy meant more thorough and consistent breakage, more payload work out of each piece of his equipment, and minimum downtime from end to end of the job.

In another case, a coal stripper in Ohio developed a way to eliminate almost one-half the total mechanical handling of overburden. He used explosives force to cast much of the overburden directly to the spoil pile, thus eliminating almost half of the mechanical handling previously required.

A quarry operator in Maryland boosted his production and lowered his maintenance downtime by using explosives energy to get more thorough, uniform breakage and excellent displacement for easy digging. The result was better production by both the shovel and the crusher—with reduced maintenance costs as a bonus.

Efficiencies, and therefore savings, like these are available to you too. Your Atlas Representative, backed by Atlas' full line—the only full line of ammonium nitrate and explosives in the industry—can help you select the right combination of explosives, blasting agents (including all forms of ammonium nitrate) and blasting supplies, to meet your particular requirements.

New, modern facilities are now in production at Joplin, Mo. and Reynolds, Pa., to assure ready availability of all Atlas products. And to give you faster, more flexible local service, expanded distribution facilities are being established coast-to-coast. For prompt assistance, call in your Atlas Representative. Or, write to:

ATLAS CHEMICAL INDUSTRIES, INC.
EXPLOSIVES DIVISION • WILMINGTON, DELAWARE

 **ATLAS EXPLOSIVES**



Armco Construction Department crew installs Armco MULTI-PLATE® Pipe at Frenchmen's Dam, part of California's Feather River Power Project.

CONTRACTORS:
Buy Armco Products
Installed
and Play Safe
with FIXED COSTS!

By turning over installation of Armco products to the Armco Construction Department on a sub-contract, you know the *exact costs in advance!*

For the past 30 years this service has been available to contractors to assure fast and efficient installation, save time and money. It also permits contractors' crews to go ahead on other projects—helps eliminate worry about impending deadlines.

This service includes installation of Armco metal drainage structures, utility conduits for sewers, retaining walls or guardrail. Armco Construction Department also specializes in jacking, boring or tunneling under streets, highways or railroads.

Write us for catalog describing this construction service. **Armco Drainage & Metal Products, Inc.,** Subsidiary of Armco Steel Corporation, 7001 Curtis Street, Middletown, Ohio.



For strength,
economy,
durability



Construction Methods AND EQUIPMENT

AUGUST, 1961

VOLUME 43 • NUMBER 8

HENRY T. PEREZ, Editor

How Are Your Ethics?

IN A LETTER to members of the Associated General Contractors of America, president M. Clare Miller says:

"During the past six months I have become increasingly apprehensive over the adverse publicity our industry has been receiving. It is a distorted image of the construction industry that is being projected on the public screen as a result of Congressional and other investigations of the highway program and building practices in metropolitan areas. I tell you frankly that it is an ugly image—one that each of us has a responsibility to correct. For, in reality, each of us is a part of that public image, because we are the construction industry. . . .

" . . . Honestly, gentlemen, I am deeply disturbed by our composite public image. We are not a bunch of crooks plying our trade in the twilight zone of irresponsibility. We are the leaders of America's greatest single industry. We constitute one of the strongest bastions of the free enterprise system that has built the greatest nation on earth. We have a great heritage and our future is unlimited, provided we see that the public has the correct understanding of our industry. This depends upon our daily actions, which speak louder than any words."

Well might Mr. Miller—and everyone else with a stake in construction—be concerned. But the concern should be not so much with the adverse publicity as with the unethical actions that give rise to it.

If there were no bribery, no knowingly substandard work, no payoffs or kickbacks, there would be no damaging headlines. Yet for each instance of wrongdoing that is played up in the press, there are hundreds of others that remain undiscovered—or at least unpublicized.

There is no doubt about it; contracting is a rugged, competitive business. But that doesn't mean that the contractor or those he deals with have to descend to the level of callous disregard of common decency, morality, or honesty.

Competition on an ethical and intelligent basis is healthy. Unfortunately, however, much of today's competition appears to be in who can get away with the most.

We have worked long and hard to change the image of the industry from a group of roughnecks to solid businessmen. Now that picture of respectability is being eclipsed.

The investigations now underway can not be dismissed as mere political propaganda. They are spotlighting unethical practices that have been around so long that too many people in the construction industry have adopted them as routine. If the investigations encourage such operators to re-appraise and correct their business conduct, they will have had a long-range beneficial effect.



BATCH PLANT—One of four portable plants feeds a fleet of dump trailers with dry batches. Average haul distance is about 30 mi.



CONVEYOR—At the site, trailer dumps batch into hopper of conveyor that carries material to truck-mounted mixer.



MOBILE MIXER—A 1-yd T. L. Smith turbine mixer mounted on flatbed truck mixes batch in 1 min. It is equipped with water metering system.

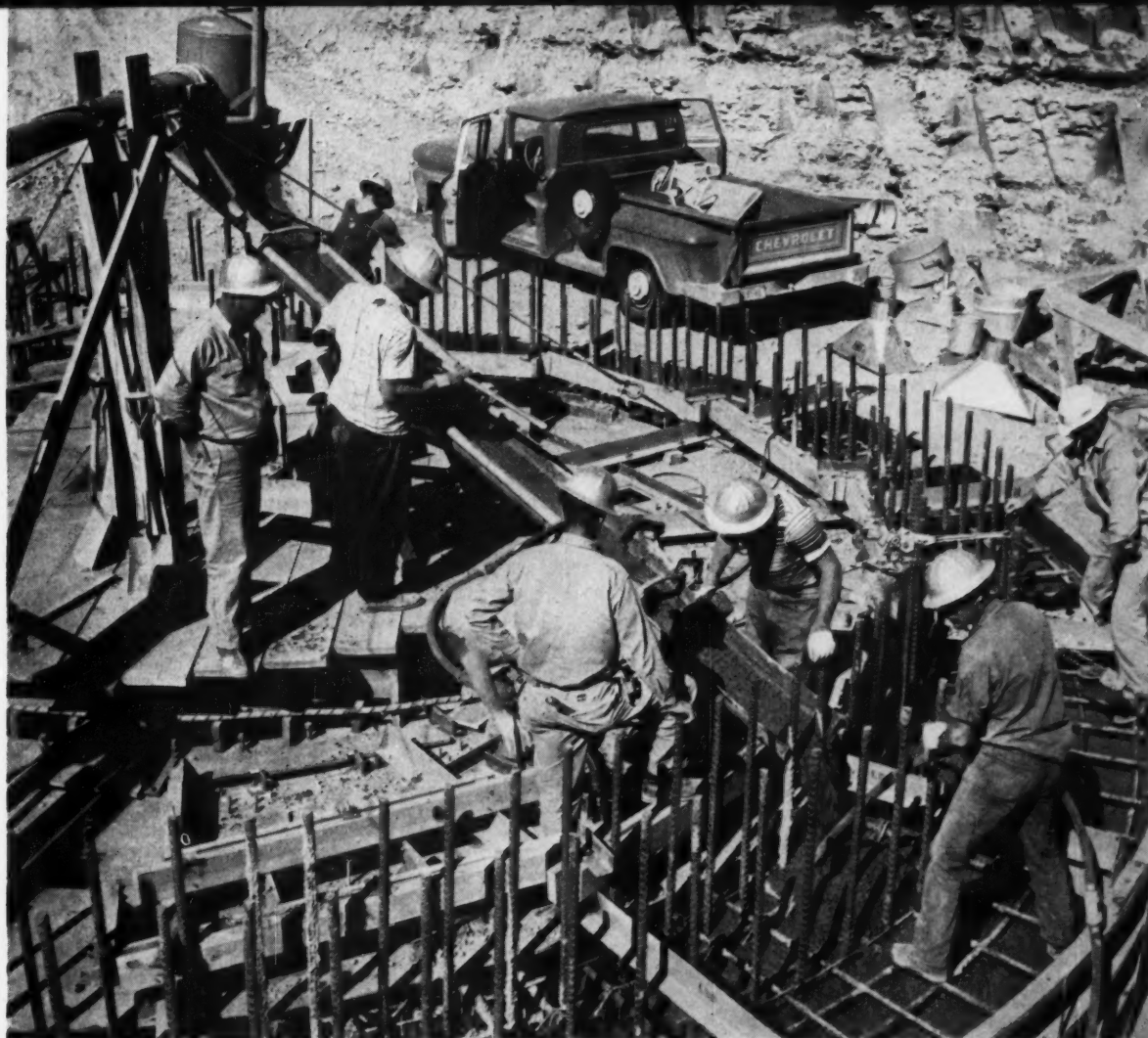


CONCRETE PUMP—Mixer discharges batch into hopper of Airplaco pump that feeds concrete to the missile silo.

Truck-Mounted Mixers Mobilize Concrete Pours

Eight portable packages consisting of a mixer mounted on a flatbed truck and a conveyor make pours for 150 widely scattered missile silos at this

Minuteman base in Montana. Four portable batch plants located at rail heads near the missile sites feed a fleet of dump trailers that haul dry batches.



INTO FORMS—Crew chutes concrete from pipe into forms. One-piece steel liner set into 14-ft-dia, 82-ft-deep silo holds concrete.

EIGHT MOBILE concrete-mixing packages, each featuring a turbine mixer mounted on a flatbed truck that pulls a portable conveyor, are scurrying over some 20,000 sq mi of Montana prairie to make pours for 150 widely scattered missile silos.

Conventional drum-type transit mixers were out of the question on this job because of the distances involved. Average haul from batch plant to missile site is 30 mi, and roads are either rough or non-existent. And, because each silo requires a relatively small amount of concrete, a separate plant for each site would have sent costs rocketing. Mobile mixing plants were a must.

Each portable package includes a 1-yd truck-mounted mixer equipped with a water-metering system. Portable conveyors feed dry batches to the mixers. Backing up the mobile mixers are a fleet of 20 dry-batch trailer trucks, eight 5,000-gal water tank trailers, four portable batch plants, and the transportation facilities of the Milwaukee Railroad.

The eight mobile mixers will produce more than 160,000 yd of concrete for the missile silos before the \$62-million project is completed late in 1962. The mixers will make nine separate pours at each of the 150 silo sites. Besides the missile silos, which

measure 14 ft in dia and 82 ft in depth, the project includes construction of 15 launch control centers.

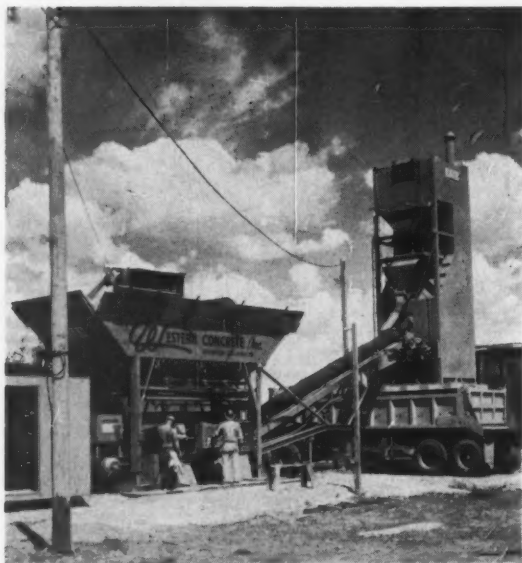
Western Concrete, Inc., of Denver, headed by Fred Hoppe, conceived the flexible, highly mobile mixing setup in consultation with the Milwaukee equipment firm of T. L. Smith Co. Western Concrete holds a \$4-million subcontract from Fuller-Webb Construction Co., the prime contractor on the project.

Each of the eight 1-yd T. L. Smith turbine mixers is mounted on a GMC Model V411 flatbed, single-axle truck. Also mounted on each truck are a 750-gal water storage tank, a 160-gal water measuring tank, an electric motor to drive the mixer, and two Essick water pumps.

A fleet of 20 Cook-Challenge and Marion dump trailers feeds the mixers. They are charged with dry batches at four portable batch plants set up at rail heads near the missile sites.

Each batch trailer is fitted with ten 1-yd compartments. Dividing gates between the compartments are separate containers that hold cement. A control panel at the side of the trailer permits the operator to open each gate individually. Electric controls open the gates in sequence—a safe-

TRUCK MOUNTED MIXERS . . . continued



BATCH PLANT—One of the three Erie Strayer batch plants on the job will move to another rail head as work progresses to keep as close as possible to truck-mounted turbine mixers.



AGGREGATE PLANT—A large plant near the site produces aggregates for concrete. Rail cars carry aggregate to each of the four portable batch plants that supply the mobile mixers.

guard that prevents intermixing of the batches.

The batch trailers empty dry batches into the hopper of a 30-in. conveyor that feeds each mixer. The conveyor carries a carefully measured batch of aggregate, cement and Protex additive from the ground-level hopper to the top of the mixer. A canvas canopy covers the conveyor belt and prevents wind from blowing away cement.

Pulled by Peterbilt and Dodge diesel tractors, the batch trailers are supplied by Milwaukee Motor Transportation Co., a subsidiary of the Milwaukee Railroad. The 5,000-gal tank trailers that supply water to the mixers were formerly petroleum tankers.

Four batch plants back up the concreting operation. One is a Noble Dual plant located near the source of aggregate. The others are fully-automatic Erie Strayer 100-yd-per-hr plants equipped with recorders for precise quality control. Each of these plants has a cement storage capacity of 350 bbl.

Because most of the aggregate is delivered by the Milwaukee Railroad, each of the portable plants was set up at rail heads near missile silo sites. As work progresses, the contractor will move them to other rail points to keep them as close as possible to the mobile mixers.

At a silo site, a mobile mixer is plugged into a 220-v outlet. Electricity is available at each site because power is needed for base operation as well as construction. It is supplied by Montana Power Co. However, there is not sufficient electricity at each site to power all construction equipment. That's why the conveyors are powered by gas engines.

After each 1-min mix cycle, a slide gate at the bottom of a mixer empties concrete into the hopper of an Airplaco concrete pump. Most of the concrete is pumped into place in the silos, but Western employs a P&H truck crane with a Gar-Bro bucket to handle some small pours.

The rear of each flatbed mixer truck is notched in a V-shape so a crane can place a bucket directly below the mixer discharge gate.

Before each pour, Fuller-Webb installs a one-piece steel liner in each silo to hold the concrete. Fabricated by the American Bridge Div. of U. S. Steel Corp., the liners are shipped to the site by rail and truck from Salt Lake City. Steelworkers install a mesh of reinforcing bars around the exterior of each liner, then it is lowered into the silo excavation and anchored in place. Concrete fills the void between the liner and the wall of the silo shaft.

Western uses a fleet of four T. L. Smith transit-mixers mounted on Mack Thermodyne diesel trucks for some small (usually 4 to 5 yd) pours close to the batch plants, but the workhorses of their concrete placing operation are the turbine mixers.

The highly efficient system requires a minimum of manpower. One man operates each of the eight mixers and two men are assigned to each of the four batch plants.

A four-channel radio network set up by Fuller-Webb and Western coordinates all operations. Receivers and transmitters are installed on each mixer unit, on all batch trailers, and in the cars of supervisors. In addition, Fuller-Webb uses two airplanes and a helicopter to maintain liaison on the widespread project.

Which Pit Would You Use To Borrow a Million Yards?

You hold a contract for a 3½-mi stretch of Interstate highway and you need 1,300,000 yd of borrow for fill. Along the right-of-way, your scraper fleet can pick up a quick 300,000 yd.

That leaves a million yards to go.

Two borrow areas are available to you. One is only a mile from the job, but the water table is so close to ground level that dewatering will be necessary — possibly with wellpoints — before you can use it.

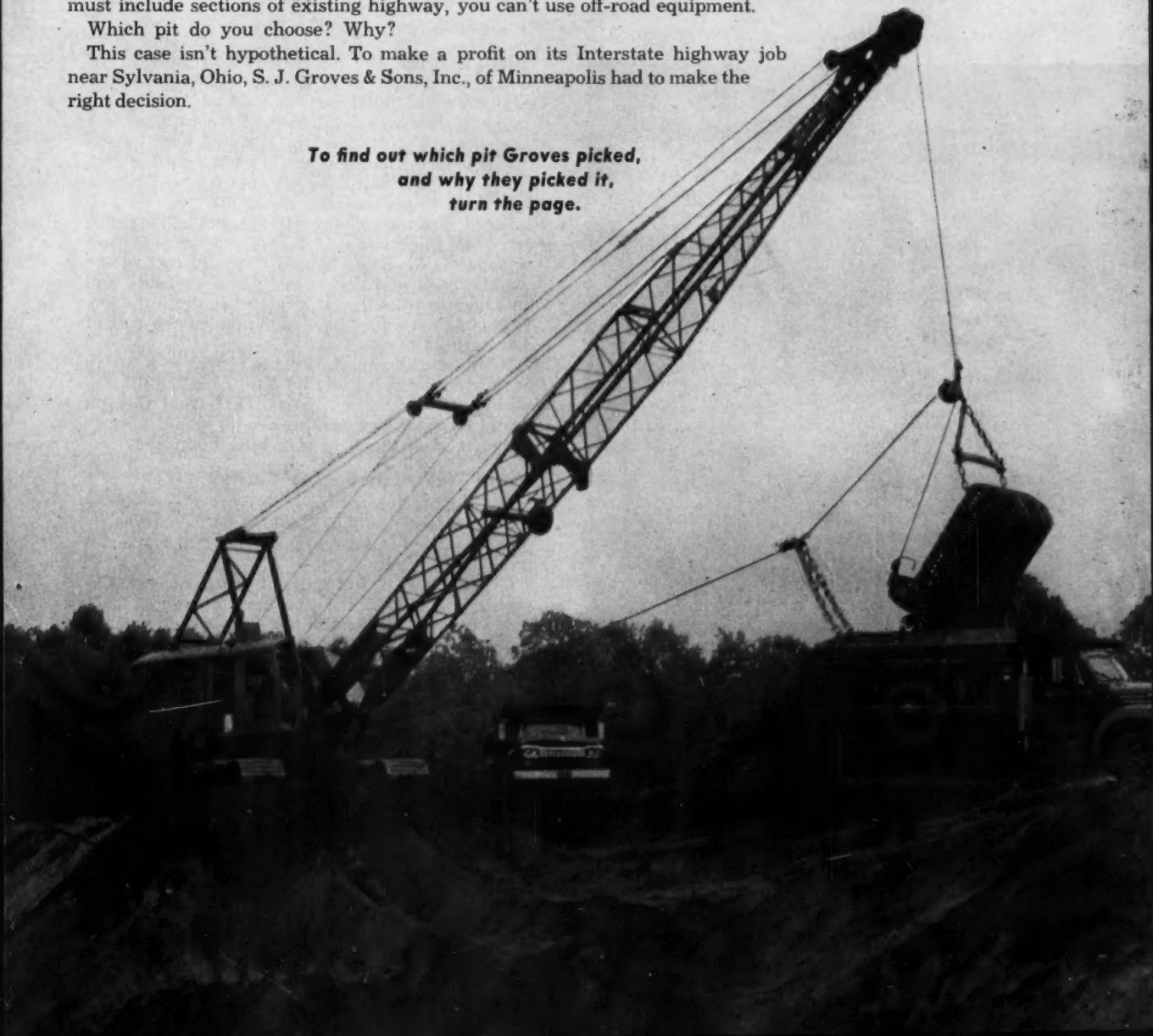
The other pit in the area doesn't need dewatering before your equipment moves in, but it's located five costly miles from the fill.

And you face another problem. Because the haul route from either pit you choose must include sections of existing highway, you can't use off-road equipment.

Which pit do you choose? Why?

This case isn't hypothetical. To make a profit on its Interstate highway job near Sylvania, Ohio, S. J. Groves & Sons, Inc., of Minneapolis had to make the right decision.

*To find out which pit Groves picked,
and why they picked it,
turn the page.*



WELLPOINTS DRY IT OUT

The Million Yards Will Come From The Dewatered Pit



THE ANSWER—Borrow area is divided into sections that are dried out two at a time by 12-in. Moretrench pumps located between sections. Dragline loads trucks in dry pit.



DIRT WOULD BE EXPENSIVE, regardless of which borrow pit S. J. Groves picked to supply 1,000,000 yd of fill for an Ohio road job.

One borrow area available to the contractor was located a mile from the job. It would need extensive dewatering before it would yield a yard of dirt.

The other pit was bone dry, but it would take a 5-mi haul to get material to the fill.

Faced with these choices, Groves boiled the problem down to a matter of dollars and cents. Project manager L. B. Hales figured it would cost in the neighborhood of 20 cents per yd to excavate and haul borrow from the pit located 1 mi from the job. To this figure would have to be added the cost of dewatering the pit.

It would cost almost 50 cents per yd to bring in borrow from the pit located 5 mi from the fill, according to Groves' estimates. Dirt from this pit would be expensive because trucks would have to travel most of the 5 mi over busy highways.

Would Wellpoints Be Too Costly?

The vital factor, then, was the cost of dewatering the pit nearest the job. Could it be dewatered by pumping from sumps connected by a system of trenches?

Groves tried it, but without much success. The capillary action of the fine sand prevented adequate free drainage. And the sand flowed with the ground water, eroding the sides of the trenches and allowing sumps to fill.

It was after this experiment failed that Hales approached wellpoint specialist Cy W. Schaffner of Moretrench Corp. with a suggestion that Schaffner now calls "original."

Hales' question: Could the pit nearest the job be dewatered by wellpoints at a price low enough to make it a practical borrow area?

The proposed borrow pit was 1,200 ft long and 600 ft wide. Schaffner told Hales that it would be too costly to place wellpoints around the perimeter of the whole area. It would also take time, and time was a luxury that Groves could not afford.

But Schaffner had another idea. Why not dewater the borrow area in sections? Moretrench could



handle the job immediately, and at a total cost of \$40,000.

Spreading this dewatering expense over the 1,000,000 yd in the pit, and adding the 20-cents-per-yd base cost for excavating and hauling material, would bring the price of borrow to about 24 cents per yd. This was about half the estimated cost of excavating and hauling dirt from the pit located 5 mi from the job.

The wellpoint idea was accepted and Groves now is getting borrow from the first dewatered section of the pit located 1 mi from the fill.

Moretrench divided the 600x2,100-ft borrow area into seven 500-ft-wide sections. The first section is 400 ft long, the next five sections are 300 ft long, and the final section is 200 ft long. By enclosing two sections at a time with wellpoints, Groves can excavate one section while dewatering the other.

The wellpoints have been installed in the first 400-ft-long section. Three 12-in. Moretrench centrifugal pumps are located between this section and the second section so that the pumps can dewater two sections at one time. After the second section is dewatered, Groves will leapfrog the pumps to a position between the third and fourth sections.

Normally, only one of the three pumps operates continuously. A second pump is used at periods of peak load and the third is kept on standby duty for emergencies.

Borings show that sand reaches a depth of about 25 ft. To dewater to this depth with 20-ft wellpoints, Groves installed the headers in a 6-ft-deep perimeter trench. A 6-in. Rex centrifugal pump kept the trench dry during installation.

Wellpoints Spaced At 7-Ft Intervals

Installation of the wellpoints for the first section was started at the pumps and continued from them in two directions. A Northwest No. 25 crane with a 40-ft boom placed the 12-ft-long header sections in the trench. Headers in half of the 400-ft-long section nearest the pumps are 12 in. in dia because they carry the bulk of the water. Ten-inch headers handle the job in the remaining part of the section. The wellpoints, which are spaced at 7-ft

intervals, were jettied into place with a Moretrench jet pump.

To dewater the first section, a crew placed enough header pipe to cover about two-thirds of the area, and then inserted valves to close off the system. Then the contractor turned on the pumps. While dewatering got underway, the crew completed installing the remainder of the first section headers and wellpoints.

Before starting to excavate, Groves pumped the first stage for 10 days. The wellpoints pumped about 365 pgpm to an open ditch that drained water from the site. Groves keeps 22 psig vacuum on the system at all times.

Ten days of dewatering dropped the water table, which was from about 1 to 4 ft below ground level, enough so that Hales could bring in his earthmoving equipment. A pair of Northwest No. 95 draglines with 60-ft booms and 3½-yd buckets are handling all excavation. They load a fleet of fourteen 10-yd Daybrook trucks that haul the sand to the fill. A grader keeps a haul road in shape across the borrow pit.

Groves is working two 10-hr shifts per day and averaging 600 yd of excavation per hour. When the draglines have excavated half of the first stage, the contractor will pull the header at the far end of the section and place it between the second and third stages.

Groves keeps at least 200 ft of header ahead of the draglines at each side to keep water from seeping back into the hole. In addition, a pair of Homelite centrifugal pumps helps keep ground water from collecting in depressions.

Scrapers Carry Additional Fill

In addition to the borrow pit being dewatered by wellpoints, Groves has opened a small pit near one fill area to furnish the rest of the required borrow. Here, Groves has already gone down 16 ft without encountering any substantial amount of water. Three Cat DW21's push-loaded by a Cat D9 are handling excavation.

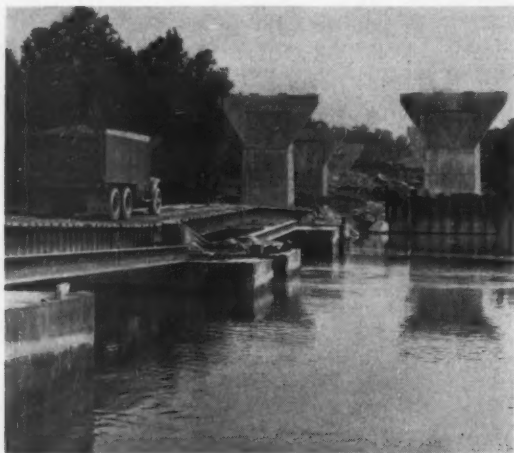
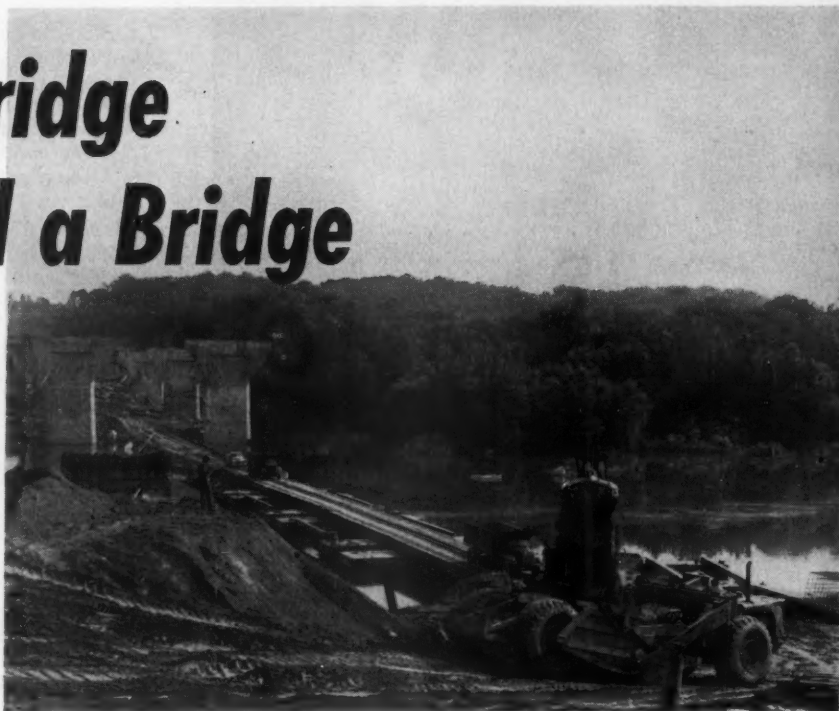


SCRAPERS HELP—Although the majority of the 1,300,000 yd of borrow will come from the dewatered pit, three Cat DW21 scrapers obtain some fill from small, dry pit near the project.

Takes a Bridge To Build a Bridge

To move earth across the Potomac River for a bridge job, the contractor built a construction bridge that floats on pontoons because rocks in the river bed ruled out a trestle-type structure.

LOADING—Crawler-mounted Bay City shovel loads dirt from a storage pile into Allis-Chalmers scraper. Dump trucks are loaded by shovel at same location.



HAULING—Spans of the floating bridge are designed to deflect as trucks cross them on way to fill area across the river.



SPREADING—Scraper spreads fill evenly to reduce grading. Dozers are needed to spread the loads delivered by dump trucks.

SCRAPERS AND TRUCKS travel on a floating bridge to haul earth from Virginia to Maryland during construction of the Cabin John Bridge that will carry Interstate Route 495 across the Potomac River near Washington.

Besides serving as a haul route, the floating bridge also carried cranes and trucks during pier construction. Later, it will provide access to both sides of the river during the erection of steel girders.

The Potomac River is almost 500 ft wide at the job site. Rock in the river bed ruled out a trestle-type construction bridge. To simplify the job, the floating bridge was constructed by the contractor, Ruckman & Hansen, Inc., of Ft. Wayne, Ind.

Steel pontoons and structural components were prefabricated in the contractor's shop and assembled at the job site. A timber roadway was built from materials available at the site. The bridge can be disassembled easily, and practically all materials are salvageable.

Pontoons Carry 65-Ft Spans

The 260-ft-long floating bridge has four 65-ft spans. Each is supported on two 6-ft-deep, 10x40-ft pontoons. The ends of the construction bridge rest on 3x16-ft concrete abutments, each built on six timber piles. An earth embankment at each end of the bridge connects it to land.

One abutment serves as the anchor for the bridge. The other is an expansion abutment that permits 6 in. of longitudinal movement of the bridge as loads travel across it. At both ends, connections are made with 1½-in.-dia pins welded to reinforcing steel in the concrete abutments.

Pins at both ends permit the bridge to move vertically so that it can ride up with the water level in case of a flood. To keep the bridge from floating

away, each span is tied to a cable stretched between anchors on the river banks.

Each pair of steel pontoons supports four longitudinal 30 WF 132 beams that carry the deck. Beams are reinforced with ½-in.-thick web stiffeners and braced with 4x4x¾-in. angles.

Beams in adjacent spans are connected by steel hinge pins that allow the spans to deflect as loads move across the bridge. To maintain the 51-ft c-c spacing between the two pontoons in each span, Ruckman & Hansen connected the pontoons with wide-flange beam strongbacks.

The bridge deck is 14 ft wide and is made of 3x12-in. planks placed transversely to the beams. Longitudinal 2x12's on top of the transverse timbers complete the roadway.

The bridge is designed for a live load of 70 tons, which is the approximate weight of the biggest crawler crane or shovel working on this project. The heaviest dump trucks and scrapers handling the earthmoving weigh about 60 tons when fully loaded.

Shovel Loads Trucks, Scrapers

Earthmoving on the job involves only about 80,000 yd of dirt, but it is slow because of the one-way bridge and because hauling units must be loaded by a shovel. To speed the project Ruckman & Hansen subcontracted the earthmoving to Schrom Construction, Inc., of Greenbelt, Md.

Their fleet of White and GMC dump trucks and Allis-Chalmers scrapers moves dirt from a storage pile on the Virginia side of the river to a fill area on the Maryland side. At the storage pile, a 2-yd Bay City shovel loads both the trucks and the scrapers.

Scrapers can spread their loads evenly on the fill, but on this job the trucks are more efficient because of the loading method. During peak activity, Schrom operated six dump trucks and four scrapers.

On the fill, Caterpillar D8's with dozer blades spread the dirt and a 35-ton four-wheel Bros proof roller pulled by a D8 compacts it. When the dozers can't handle all the dirt dumped in the fill area, one of the scrapers helps spread it. And when the ground is wet after a rain, the D8's push the trucks and scrapers up the steep grades leading to the fill area.

The floating bridge will remain in place after earthmoving is completed. Although it is not heavy enough to carry big equipment and steel girders during erection, it will provide a short route for transporting tools and personnel from one side of the river to the other. When the entire project is completed, Ruckman & Hansen will dismantle the construction bridge and salvage most of its components.

Men on the Job

Handling the project for Ruckman & Hansen Inc. is Ed Wagner, job superintendent. Tony Peters is job engineer.

District engineer for the Maryland State Roads Commission is W. L. Shook. Chief engineer is D. H. Fisher, and resident engineer for Maryland is J. Buffington.



FLOATING BRIDGE—Earth embankments link the 260-ft, four-span floating bridge to sites on both sides of the Potomac River.



FILL AREA—Dump trucks deliver dirt to the fill area and Cat D8's spread it before it is compacted by a 35-ton Bros roller.



DOZERS ADVANCE SURCHARGE—Building a ramp behind relief trench, crawler dozers roll surcharge ahead to squeeze out muck and replace it with sand.

DRAGLINES EXCAVATE MUCK—Working from mats at edge of swamp, two Northwest draglines excavate displaced muck from trench that they dig ahead of the surcharge.

When muck in this swamp exceeds 10 ft in depth, the contractor turns from total excavation to a rolling surcharge that pushes muck into a relief trench. From there it is removed by a pair of draglines.



Rolling Sand Surcharge

THIS ROADBUILDER makes sand work as an earthmoving tool.

Kenny Construction Co. of Skokie, Ill., places a rolling surcharge to displace 1,500,000 yd of muck from a Michigan swamp where two Interstate highways intersect.

Kenny cuts a 10-ft-deep relief trench across the 300-ft-wide roadway and squeezes muck into it by rolling a surcharge over the muck in back of the trench. Draglines working from mats scoop out the displaced material and cast it aside. The draglines also keep the trench open ahead of the advancing surcharge.

Kenny actually employs two methods to handle the muck. When depth of muck does not exceed 10 ft, the contractor excavates the deposit and replaces it with sand brought in by scrapers.

This technique does not require a surcharge on top of backfill because unstable material is completely removed to a firm bottom.

But for muck deposits deeper than 10 ft, Kenny partially excavates the muck (by cutting the relief trench) and displaces the rest with a rolling surcharge. Total excavation does not produce satisfactory results when muck depth exceeds 10 ft because (1) the excavation is usually under water and inspection is difficult, and (2) the material is not stable enough to stand at the sides of the cut.

Here's the theory behind Kenny's method. The rolling surcharge overloads the weak material and, together with the relief trench, creates an unbalanced condition. As the surcharge is moved ahead, sand displaces the

underlying muck and pushes it up into the relief trench where it is within easy reach of draglines.

Kenny's two Northwest draglines with 90-ft booms and 3-yd buckets cut the relief trench. Then crawler tractors build a ramp behind the trench with the surcharge material, which is brought in by scrapers from a nearby borrow pit. The height of the surcharge is made equal to the depth of muck, which averages about 27 ft.

As dozers squeeze out the underlying muck by moving the surcharge ahead, the draglines extend the trench to keep its width equal to the depth of muck.

At the borrow pit that supplies sand, an Allis-Chalmers HD-21 charges a Kolman loader with a 6-ft belt. The loader feeds a fleet



AT THE PIT—Charged by an Allis-Chalmers HD-21 crawler tractor, this Kolman loader feeds sand for surcharge to a fleet consisting of four Caterpillar DW20's and five Athey wagons hauled by Cat DW20 tractors.

IN THE CUT—One of two Euclid TC-12 push-dozers gives a lift to a Euclid S-24 scraper in side-hill cut that supplies 4,000,000 yd of fill to go atop sand blanket in swamp. Haul distance to swamp averages 2,000 ft.



Moves Muck

consisting of four Caterpillar DW20 scrapers fitted with side-boards and five Athey wagons pulled by DW20 tractors.

A 4,000,000-yd cut on another section of highway supplies fill for the 1-mi-long swamp section. After the muck has been displaced by the rolling surcharge, dozers level the sand blanket to 2 ft above original ground. This blanket holds the fill, which varies in height from 16 to 45 ft.

Working two 10-hr shifts, a fleet of scrapers that includes nine Cat DW21's, four Cat 631A's and five Euclid S-24's moves an average of 20,000 yd a day. Two Euclid TC-12 crawler tractors push-load the scrapers at the cut. Haul distance from the hillside cut to the swamp varies from a minimum of 1500 ft to a maximum distance of about 1/2 mi.



ON THE FILL—A Michigan wheel tractor pulls a double-drum sheepfoot roller to compact fill. Dozers first level sand blanket that holds fill to 2 ft above original ground, then scrapers unload. Contractor also aerates fill with disk harrow to reduce moisture content and obtain compaction.



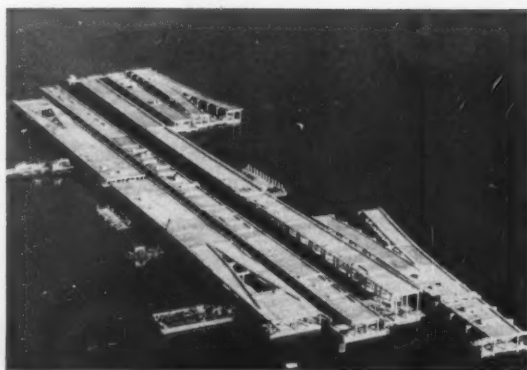
UNIQUE COFFERDAM HELPS

Before epoxy resin can be placed to join the pontoons together, end faces must be cleaned and sandblasted. To expose the ends for these operations, the contractor developed a three-sided cofferdam (left, being built).



PIPE FLOAT—Normally used in pairs to float the discharge line from a suction dredge, six of these units handle the cofferdam while it is maneuvered into position.

Epoxy Glues Pontoons Together



BRIDGE SECTIONS—Floating in the protected waters of Port Gamble Bay, Washington, some of the 23 concrete pontoons for the Hood Canal Bridge several miles away wait to be joined together. The big pontoons carry a roadway 20 to 50 ft high.

EPOXY RESIN is helping to join 23 big concrete pontoons into a floating bridge across the Hood Canal. The Washington Toll Bridge Authority didn't plan it that way; the units originally were to be coupled together by bolts and a cement grout.

But after 10 of the pontoons had been assembled, the joints failed during a severe storm and had to be redesigned.

The new joint design heavies up the bolts and replaces the cement grout with a fast-setting epoxy polysulphide cured with amine. Mixed with sand and poured into 1½-in. gaps between the ends of adjacent pontoons, the resin cures into a substance with an estimated ultimate compressive strength of 10,000 psi. And it can take a certain amount of flexing during its cure without destroying its bond to the concrete.

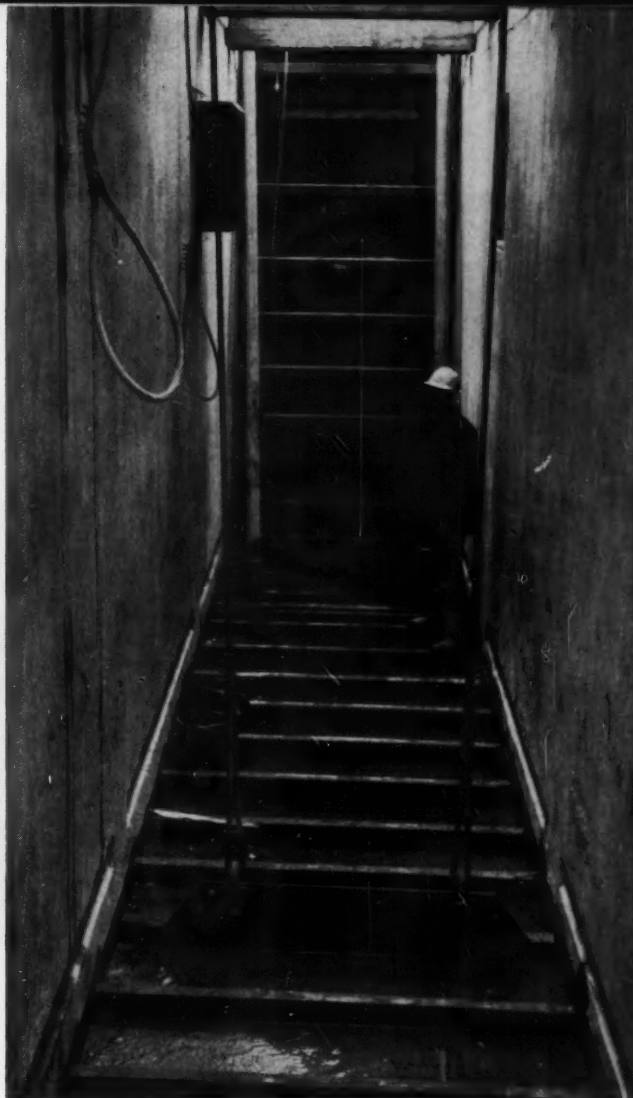
Typical pontoon is 360 ft long, 50 ft wide, and 14 ft deep. Yuba Erectors Div. of Yuba Consolidated Industries, San Francisco, has the job of

TO PREPARE UNITS FOR BONDING

Set in place around bottom and sides of the ends of two adjacent pontoons and then dewatered, the cofferdam provides about a 5-ft working chamber (right). The cofferdam's steel skin plate, $\frac{1}{4}$ in. thick and stiffened by angles, is welded to heavy edge beams. The edge beams carry a rubber strip 6 in. wide that acts as a seal.



DAM HOLDERS—Four ratchet jacks hold the cofferdam up tight against the bottom of the pontoons, cross-deck cables hold the sides. Spacer blocks keep pontoons apart.



to Make a Floating Bridge

stringing them together. But before the units can be bonded with the epoxy grout, their 14x50-ft end faces must be prepared in the dry.

For this, Yuba developed a steel cofferdam that fits around the bottom and sides of the facing ends of two adjacent pontoons that are to be bonded together. Dewatered, the cofferdam provides about a 5-ft-wide working chamber.

The cofferdam is 6 ft wide. Its $\frac{1}{4}$ -in. skin plate is welded to angle stiffeners that frame into 24WF76 edge beams on the bottom and 10WF33's on the sides. A 6-in.-wide strip of 2-in. rubber attached to the edge beams seals the cofferdam while it is in place.

The cofferdam sides are hinged to the bottom. And pipe braces hold them canted outward temporarily while the unit is positioned between two pontoon ends.

Six dredge-pipe floats, 45 in. in dia. and 12 ft long, suspend the 70,000-lb cofferdam beneath

them while the two pontoons are winched to within 6 ft of each other. A series of timber spacer blocks at deck level sets the exact distance.

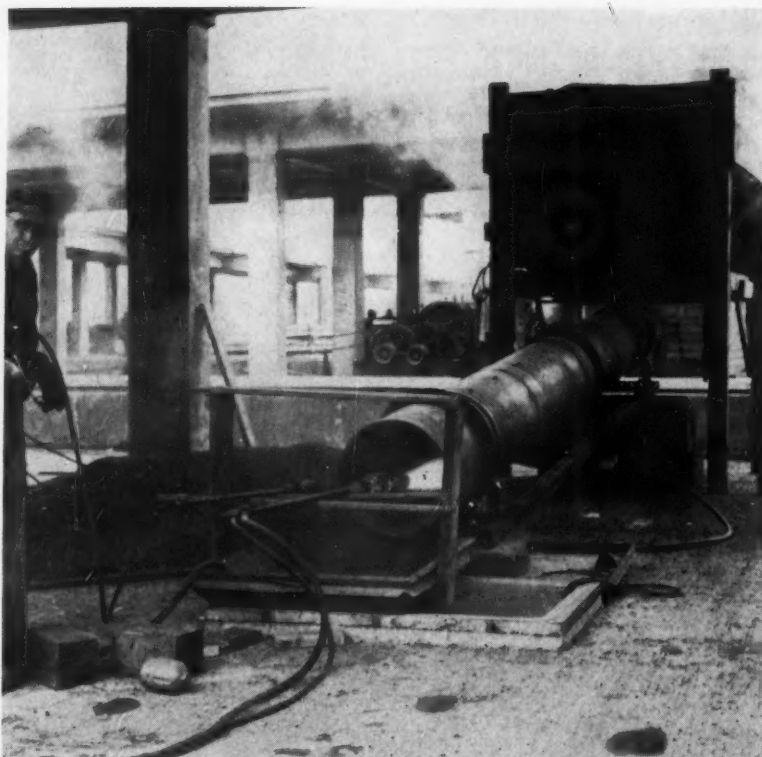
Then the cofferdam is affixed to the pontoons, cables from winches pulling the side walls up and tight against the concrete. In this position, steel stubs at the ends of the cofferdam's sidewall edge beams project horizontally over the pontoon decks. Four 10-ton track jacks inserted between stubs and decks hold the cofferdam firmly in place.

Pumps dewater the cofferdam. The pontoon ends thus exposed are cleaned and sandblasted. Then a continuous rubber strip, 2 in. wide and 3 in. thick, is bonded with epoxy into a $1\frac{1}{2}$ in. deep groove originally cast into the bottom and sides of the end of one pontoon. Heat from a flame thrower or space heater helps speed the epoxy cure.

Then the cofferdam is removed and winches pull the two pontoons together until the rubber seal has compressed just enough to make the space be-

EPOXY GLUES PONTOONS TOGETHER...continued

Mixing and Placing Epoxy-Adhesive Grout to Bond the Pontoon Ends Is Meticulous



DRYING—Rotary kiln dries the sand that will be mixed with two chemicals (an epoxy and a polysulphide-amine) to make grout for bonding. Air motor turns kerosene-fired unit.

tween them watertight. Now the 80 bolts that will help hold the pontoons together are inserted. As workmen remove plugs from the existing bolt holes, about 800 gal of salt water drain into the pontoons from the small gap between their ends. Pumps remove this water as well as that from two fresh-water flushings of the gap to remove any salt deposits.

Insertion and tightening of the 1½-in.-dia high-tensile bolts narrows the gap, which is to be filled with the bonding epoxy-resin, to 1½ in. After the epoxy has cured, bolts are tensioned to 70% of their ultimate strength.

In preparation for pouring the epoxy bond, the pontoon ends are heated to speed the curing reaction. A 75-kw diesel generator supplies 440-v current to 48 heating elements, each 14 ft long. These hang in the 1½-in. gap, suspended from spikes across it. Boards cover the gap between elements to minimize heat loss.

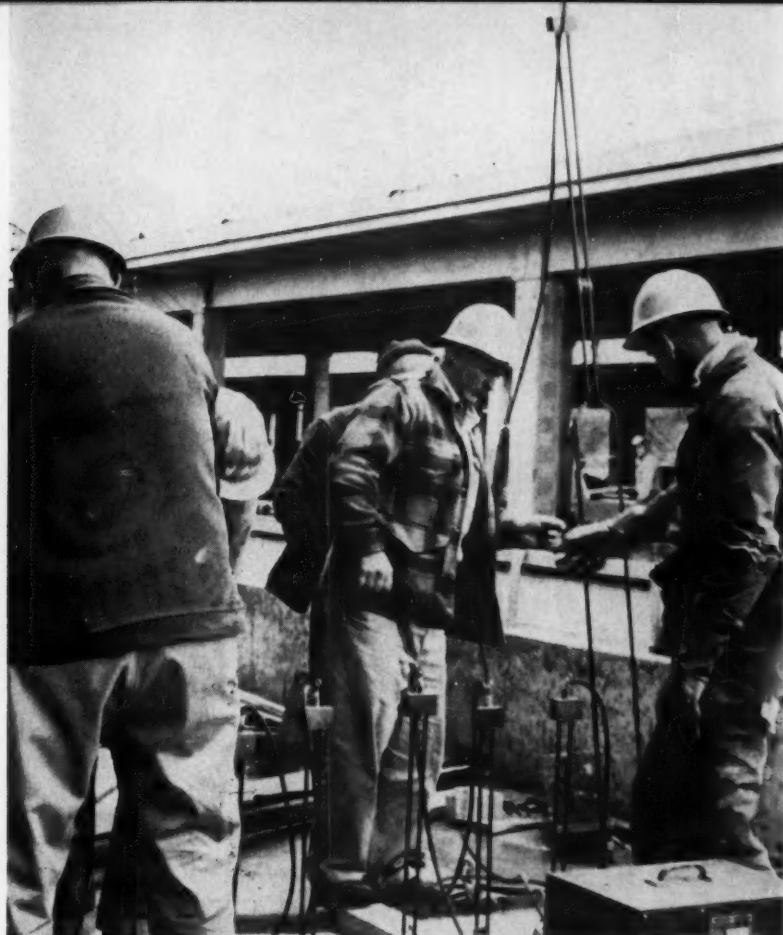
Four to six thermocouples in the gap tell when the required 125-deg temperature is reached, usually in 6 to 12 hr. The thermocouples also keep track of temperatures during pouring and curing of the bonding material.

This grout consists of sand and two components of Concrete No. 17, supplied by Adhesive Engineering, San Carlos, Calif. One component is an epoxy, the other a polysulphide-amine. They are delivered separately in 50-gal drums.

Electric heaters are wrapped around the drums when the concrete at the pontoon ends nears 125 deg, to make their contents pourable. And concrete



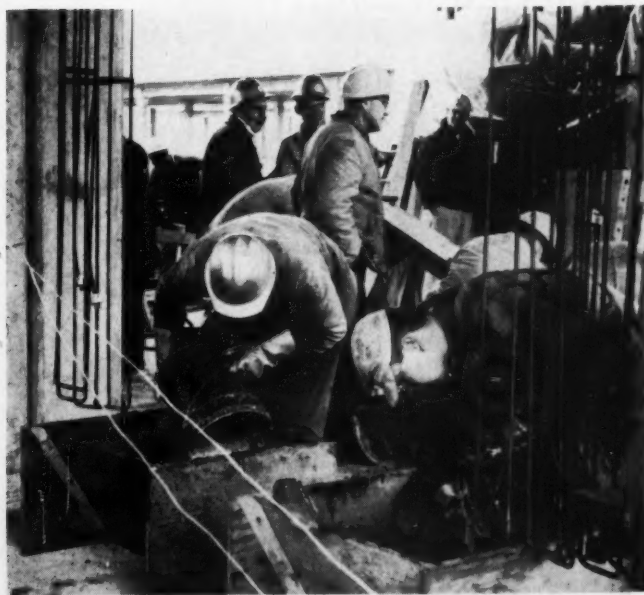
MIXING—Chemicals are mixed 30 sec, then 3 gal of sand are added and the grout is mixed 1 min more. A shafted paddle in an Ingersoll-Rand air drill handles the mixing.



HEATING—The end faces of the concrete pontoons are heated by electric resistance elements 14 ft long that hang between them. Here, element is removed before grout pour.



MEASURING—Into a 5-gal mixing pail goes a carefully measured $\frac{3}{4}$ gal of each chemical for each batch of grout. Job requires about 8,500 gal of chemicals in the largest structural application of epoxy. Adhesive Engineering supplies it.



POURING—From the mixing buckets, the stiff epoxy grout is funneled into the $1\frac{1}{2}$ -in. gap between pontoon ends. A typical joint requires 210 individually mixed batches.

sand, $\frac{1}{8}$ -in. maximum size, is dried and heated in an 18-ft-long steel-pipe kiln with metal strips welded lengthwise to agitate the material. An air motor rotates the kiln, which is fired by a kerosene burner at its lower end.

The bonding operation takes about 3 hr. First, heating elements are removed from the gap between pontoons and replaced with five metal-lined wooden funnels. Near each funnel is a mixing station where the grout is prepared. Mixers consist of a shafted paddle in an Ingersoll-Rand air drill. The drill is mounted on a counterweighted timber lever arm for easy insertion or removal of the paddle from a 5 gal mixing bucket.

Into the bucket a workman pours $\frac{3}{4}$ gal of each of the two chemical components. After 30 sec of mixing, 3 gal of sand are added and the grout mixed about 1 min. Then the bucket is emptied into the funnel a few feet away.

Each batch produces approximately $3\frac{1}{2}$ gal of epoxy grout. And it takes 210 batches, produced by a 15-man crew, to fill the gap completely and tightly bond two pontoons ends together. Generally, three pontoons were joined by bolts and epoxy, then strengthened with prestressing cables. Finally, the three-pontoon units were similarly connected to complete the bridge.

On the job for Yuba are Edward Ryan, superintendent, and Eero Hakkanen, project engineer.

One Batch Plant Site Must Service 15-Mi Road Job

There are no material unloading facilities, no haul roads, and no water available to the contractor on this Kentucky paving job, but job-built installations and a fleet of 130 trucks enable him to average 5,000 ft of pavement a day.



FLOATING DOCK—Two barges at the shore serve as a mooring for other barges that carry material. Northwest clamshell on the dock charges a hopper that feeds two-part conveyor. The lower part of the conveyor rides with the water level and delivers materials to a conveyor on land.

Unloading Dock Is Protected Against Floods



LOADING STATION — Conveyor dumps materials into two hoppers that load trucks.





PAVING 15 MI of four-lane highway from a single batch plant set up is not the most efficient way to do the job, but it's the only practical way on an Interstate project in Kentucky.

Materials must be hauled 10 mi by truck from barges on the Ohio River. Because the heavy truck loads would damage road surfaces, the Kentucky Highway Dept. allows the contractor to use only one state road for hauling materials for the entire job.

The contractor, W. L. Harper Co. of Cincinnati, set up its batch plant where the haul road enters the job site and is paving the entire 15-mi stretch of I-75 from there. A fleet of 130 trucks is needed to supply materials.

Work on this \$5½-million paving project near Walton, Ky., includes placing a 6-in. crushed limestone subbase and 10-in. wire-reinforced roadway slabs. All materials for the subbase and the pavement are hauled by trucks from a specially built unloading dock on the Ohio River.

This facility consists of barges, conveyors, and hoppers. Two barges are anchored permanently to the shore and serve as a dock for other barges that deliver materials. One stationary barge supports a Northwest crawler crane with a clamshell bucket that charges a hopper on the other barge. This hopper feeds a conveyor that delivers materials to two hoppers on land for loading two trucks at a time.

To prevent changing water levels from damaging the conveyor system, Harper built it in two parts that can be adjusted easily for changes in

elevation. One part, mounted on a barge, rides up and down with the water level. The other part, located on land, is stationary.

The discharge end of the floating conveyor is above the lower end of the stationary conveyor, which is equipped with a movable hopper to keep materials from spilling over the sides of the belt. The hopper rides on rails attached to the conveyor frame.

As the water level in the river changes and the discharge end of the floating conveyor moves up or down, the hopper on the stationary conveyor is adjusted to receive materials. A hand winch pulls the hopper up, and it moves down under its own weight.

Some of the unloaded materials are not hauled to the job site immediately, but are stockpiled. The stockpiles serve as surge piles to maintain a continuous supply of materials for the trucks. Over the 10-mi haul, trucks tend to bunch up and get in each other's way. When extra trucks arrive at the unloading site, they replenish the surge piles instead of making the long haul. When the barges are empty and full ones are not yet in position, the trucks are loaded from the piles by a Michigan tractor shovel.

Aggregates for the concrete and limestone for the subbase are stockpiled at the batch plant site. The crushed limestone is mixed with water in a pugmill before it is placed for the subbase.

The job will require a total of 400,000 tons of limestone and 225,000 tons of sand and gravel, all hauled in by trucks. To simplify the job, Harper

Big Spread Compacts Subbase



INITIAL COMPACTION—A 16-ton Buffalo-Springfield compactor rolls the subbase after Cat D8 with spreader has placed it.



GRADING—Galion grader fills in gap left between two adjacent passes of the spreader. Wing on grader blade eliminates windrows.



COMPACTION—Galion three-wheel roller equipped with vibratory shoes and a pneumatic-tired roller compact wet limestone.



WATER SUPPLY—Ponds along the right-of-way supply water to portable tanks that feed tank trucks. A 6-in. pump fills the tanks.

hired the Glasscock Trucking Co., Inc., of Leitchfield, Ky., to do all hauling. Their fleet consists of about 130 trucks, including batch trucks.

A subcontractor, the Hinkle Contracting Corp. of Paris, Ky., is constructing the subbase. Placing the crushed limestone is simple. Trucks dump their loads into an Umac U-100 spreader pushed by a Caterpillar D8 tractor, and the spreader covers half the roadway in one pass.

Compacting the limestone is a problem because a variety of compaction machines are needed to achieve the specified 82% total density. The equipment line-up includes a segmented-pad roller, a pneumatic-tired roller, steel rollers, and vibratory compactors.

First is a 16-ton Buffalo-Springfield K-45 Compactor. It is followed by a nine-wheel Galion pneumatic-tired roller. Then a Galion T-500 grader levels the limestone and fills the gap between the two passes of the spreader. The grader's blade is equipped with a wing plate that prevents the grader from leaving a windrow at the end of the blade.

Following the grader come alternating passes of the pneumatic-tired roller, a 10-ton three-wheel Galion steel roller equipped with vibratory shoes and a sprinkler truck. When necessary, a crawler-mounted Vibro Tamper joins the compaction team.

There is no way of checking the results during compaction. The contractor waits until state high-

way engineers test the subbase by a water balloon method. The subgrade is tested every 500 ft. If it doesn't come up to specs, additional tests are made to locate the stretch that needs reworking.

All concrete is batched at the three-stop plant in the middle of the 15-mi project. The plant consists of one batcher for coarse aggregates, two for cement, and one for sand. The aggregate batcher and one cement batcher are made by Erie-Strayer; the other cement batcher is a Blaw-Knox unit and the sand batcher is manufactured by Johnson.

A Northwest clamshell charges the aggregate bins, and a Lorain clamshell feeds the sand bins. Cement is hauled to the plant in batch trucks.

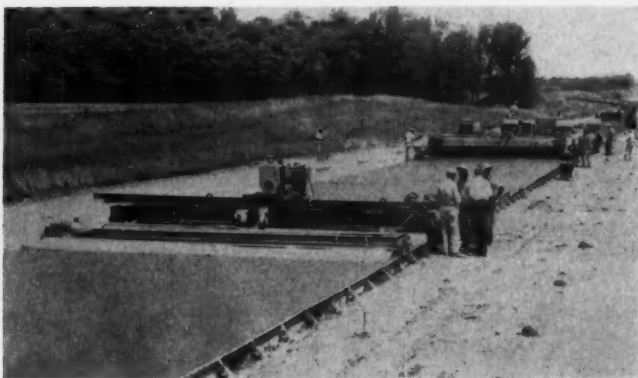
All batching equipment is powered electrically by a 350-kw Cat D397 electric set. A standby 40-kw Cat D315 set supplies extra power when all machines are working at the same time or when several are being started up simultaneously. The limestone pugmill also is powered electrically, but from a separate Cat D333 set.

Batch trucks with four and five-batch bodies haul the dry mix to the three pavers on the project. Each paver tows its own water wagon, which is filled by tank trucks.

The tank trucks haul water from three movable storage tanks at ponds that Harper dug along the right-of-way to collect rainwater. The storage tanks are high enough to provide gravity feed into the tank trucks. Each tank is supported on a skid-



THREE-STOP PLANT—Aggregate, cement, and sand batcher (background) and limestone pugmill produce all materials.



BELTING MACHINE—Belter made from an old longitudinal finisher pulls burlap drag giving the finishing touches to the roadway.

mounted frame for moving from pond to pond. One 6-in. pump keeps the tanks filled at all times. There are 13 ponds along the project; one pond at the batch plant has a separate pump and tank for supplying water to the plant and the limestone pugmill.

When the operation is going smoothly, Harper completes nearly 5,000 ft of 24-ft roadway per day with a paving train that includes three Koehring pavers. Usually the paving train moves faster than the crews placing the limestone, and Harper hopes to add more equipment to work on the subbase.

First rig ahead of the paving train is a Cleveland Formgrader that establishes the correct elevation for highway forms. These are installed by driving pins with an air hammer powered by a LeRoi Tractair. A GarWood-Buckeye subgrader levels off the limestone and a Buffalo-Springfield tandem steel roller smooths out the surface. Then crews install dowels for expansion joints, and the paving train follows.

Three Koehring pavers place concrete for the 10-in.-thick roadway slabs. Reinforcing for Kentucky highways is positioned in the slab at one third its thickness from the top surface. To meet this spec, Harper has two Twinbatch pavers place the base course, and a brand-new Tribatch following up with the surface course.

Workmen place the wire mesh from a carrier pulled by a Jaeger spreader that follows the first two pavers. Another Jaeger spreader follows the

Job-Built Rigs Speed Paving



CURING BLANKETS—Lima crane positions tray of burlap curing blankets on shop-built carrier made from a spray-curing machine.

Tribatch, and a vibrating screed and a longitudinal finisher, both made by Jaeger, smooth out the concrete.

A shop-built belter, made from a Rex longitudinal finisher, follows next. This rig was made by substituting a belting mechanism for the longitudinal float of the finisher. It also pulls a burlap drag that completes the finishing operations.

Another shop-built rig carries burlap blankets for curing the completed slabs. The self-propelled carrier was made from a Flex-Plane spray curing machine. Its frame is wide enough to hold two 24-ft-long shop-built trays side by side. Each tray carries a stack of curing blankets.

These are piled on the trays on a truck, and a Lima truck crane places the full trays on the carrier and picks up the empty ones. The two trays help the two-man crew maintain a continuous operation.

Four Clipper concrete saws cut the longitudinal joint and the transverse joints every 25 ft. After the joints are sawed, the slab is covered with sisalkraft blankets for 72 hr of additional curing.

Then a sealer made by Berry Corp. fills the joints with a bituminous compound. Forms are removed after the burlap blankets are picked up off the concrete.

Directing the project for W. L. Harper Co. is Jim Cooke, superintendent. Assistant superintendent is Tom Marx.



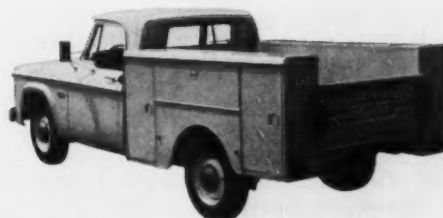
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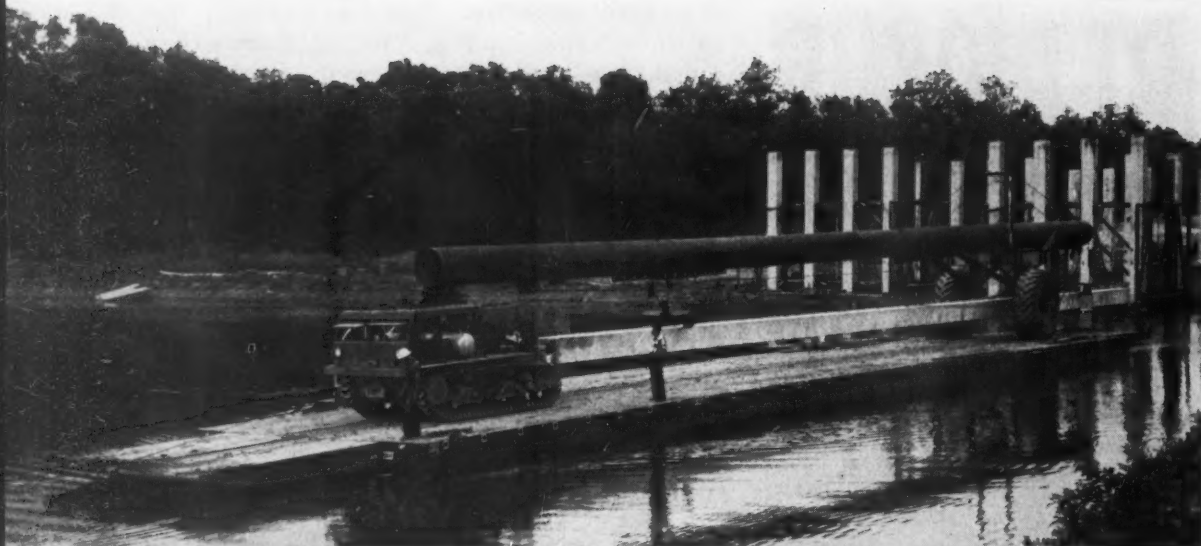
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GOES ANYWHERE—Army M4 weapons carrier rigged with an extendable pile carrier crosses river on job site ferry to deliver

prestressed piles along a 5-mi causeway project. The carrier goes anywhere in swampy terrain and moves piles up to 125 ft long.

Carrier Hauls Piles in Swamp

Because conventional equipment was useless in moving 112,000 ft of piles through a swamp, the contractor used a converted army rig that could go anywhere to deliver the piles.

AN ARMY WEAPONS CARRIER and specially-built movable scaffolds are speeding materials handling and simplifying construction of a 5-mi-long causeway near Krotz Springs, La.

The modified weapons carrier hauls piles up to 125 ft long across a swamp from the casting yard to the site, sometimes riding on special ferries to make several water crossings.

The two movable scaffolds support men and materials during construction of the roadway, curbs, sidewalks, and hand rails. One of the contractor-built scaffolds provides access to the bottom of the bridge decks and the other permits crews to work along the edges of the structures.

Six separate sections and 290 individual spans make up the 5-mi-long, dual road causeway that crosses the Atchafalaya Floodway. It consists of 1,450 prestressed concrete girders and 112,000 lin ft of prestressed concrete piles. Girders are 52 ft long and the 24-in.-square piles are from 60 to 125 ft long.

The concrete members were cast at a nearby yard by the general contractor, Blount Brothers Construction Co. of Montgomery, Ala. Blount's biggest head-

ache in the earlier stages of the project was to get the members from the casting yard to various points along the causeway site. Big trucks constantly bogged down as they attempted to find off-road access to the site.

To solve this problem, Blount brought in an old M4 Army weapons carrier and modified it so that it can carry piles of any length up to 125 ft. A telescopic 36-in.-dia steel pipe connects the weapons carrier and a dolly that is mounted on large earth-mover wheels. The leading end of the pipe is mounted on a pivot where the weapon carrier's turret used to be. A series of brackets added to the bottom of the pipe provide pickup points for piles of various lengths.

Maximum length of the extenable pipe is 90 ft. It can be adjusted to fit the length of a pile so that the pile's weight is distributed evenly between the weapons carrier and the dolly. This is especially handy for the shorter piles because reducing the rig's length increases its maneuverability.

All functions of the pile carrier are controlled from the vehicle by two men: one drives it and the other operates winches that adjust the length of the steel pipe and pick up and position piles.

Wherever piles or other materials must be moved across a branch of the Atchafalaya River, Blount installed cable-controlled ferries that are long enough to hold the pile carrier when fully extended.

After the piles are driven, Blount completes the



ROTATING PLATFORM—Movable gantry-type scaffold is equipped with work platforms that rotate horizontally so that tools and materials stay on it when it is shifted to clear pile bents as the scaffold moves. Platforms extend from each side of the roadway to its center.

ELEVATING PLATFORM—Small platform for access to edges of the bridge rides on chassis from junked car. Concrete counterweight prevents it from overturning and hand cranks in pipe mounting brackets permit vertical and horizontal adjustments of the platform position. The platform easily holds two workmen.

bents by pouring a pile cap. Then girders are placed. Each bent for one roadway includes four piles and each span includes five girders.

With the girders in place, crews form the deck and pour concrete for the roadway. A movable scaffold, similar to a gantry, holds and carries work platforms during this operation. The scaffold rides on steel wheels that move on the forms along the edges of the roadway.

Vertical scaffold members on each side of the bridge extend beyond the sides of the roadway and below it. At the lower ends special mountings hold work platforms that rotate horizontally about the vertical members so that the scaffold can be moved past pile bents. The platforms on each side of the scaffold reach to the center of the roadway and provide access for forming and stripping the deck.

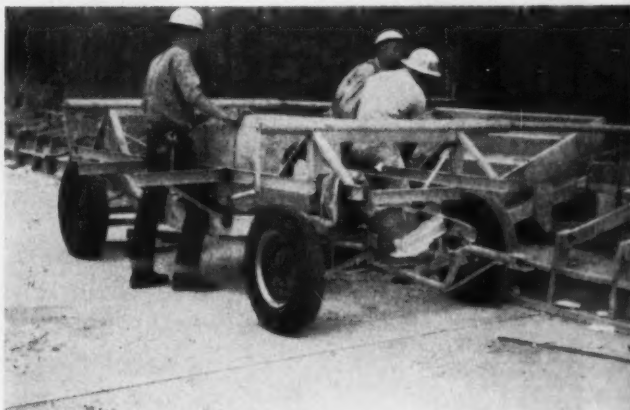
Sidewalks and curbs for the bridges are formed and poured after a section of the roadway is completed. Another movable rig holds a work platform for this operation and provides access to the edges of the bridges.

The scaffold is held in place by a frame mounted on an old automobile chassis that rides on wheels. A section of a concrete pile on the chassis acts as a counterweight to keep the rig from turning over.

Two horizontal pipes at right angles to the bridge hold vertical pipes that in turn support the work platform. Threaded steel bars that are inserted in the pipes and equipped with cranks allow horizontal and vertical adjustment of the work platform. The platform is big enough to hold two workers.

Men on the Job

In charge of the project for Blount Brothers Construction Co. is Bernard F. Johnson, superintendent. C. A. Didden, general superintendent, designed the various handling rigs used on the job.





Ted Booth, left, American Mutual Sales Manager in Kansas City, and John S. Harrow, Vice President and General Manager of Kansas City Structural Steel, discuss insurance beside a welding operation in the steel company's huge Kansas City fabricating shop.

"I like a man who can save us money"

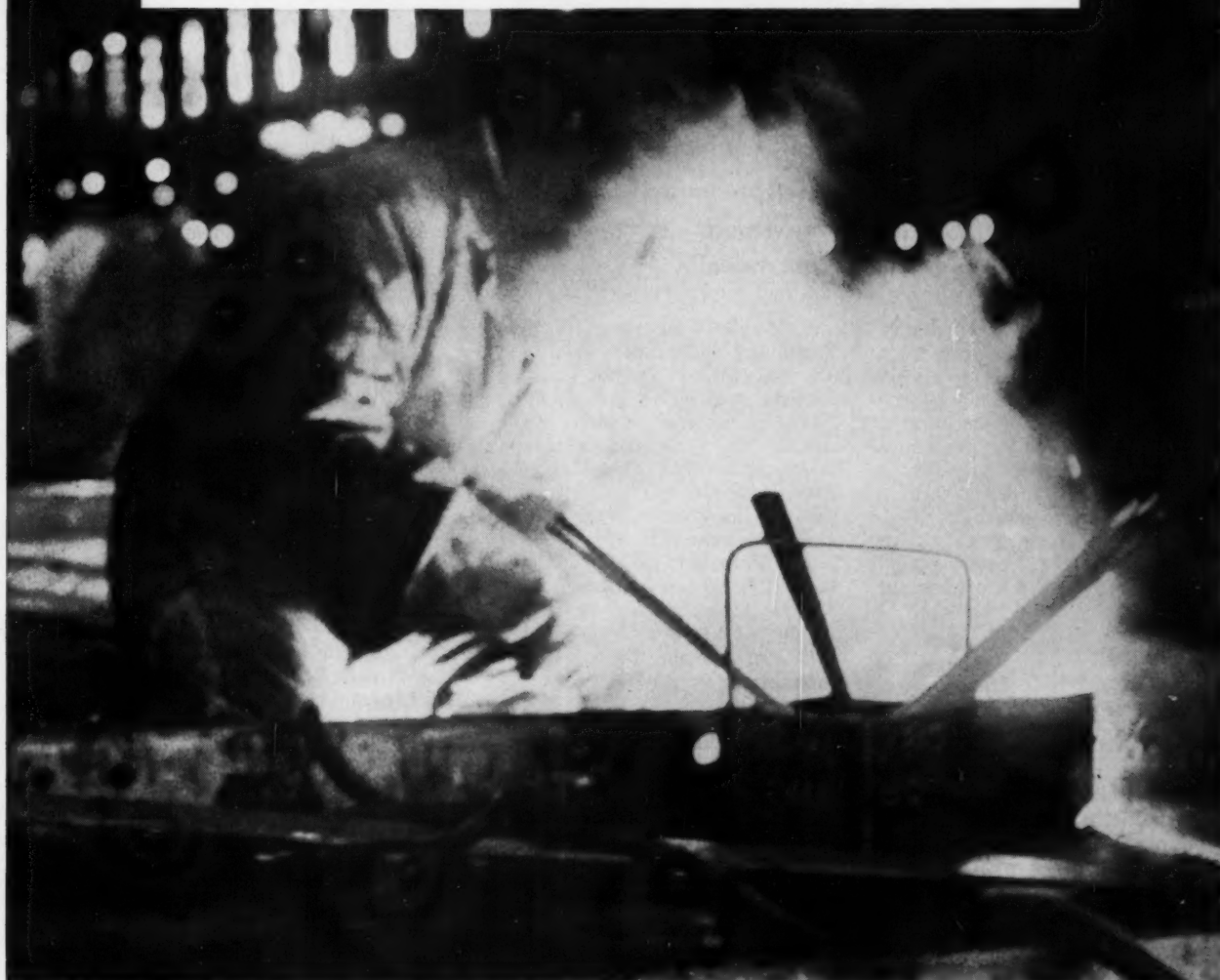
John S. Harrow, Vice President and General Manager of *Kansas City Structural Steel Co.*, major steel fabricator, says, "Ted Booth of American Mutual is a man who saves us money. With his help we've improved our coverage and brought our company's Workmen's Compensation rate 14% below industry average, over the past five years."

Experienced American Mutual men like Ted Booth help companies all over the country get better insurance protection at lower cost. Wherever you do business, there's a fully-staffed American Mutual office near you. You'll find it in the Yellow Pages.

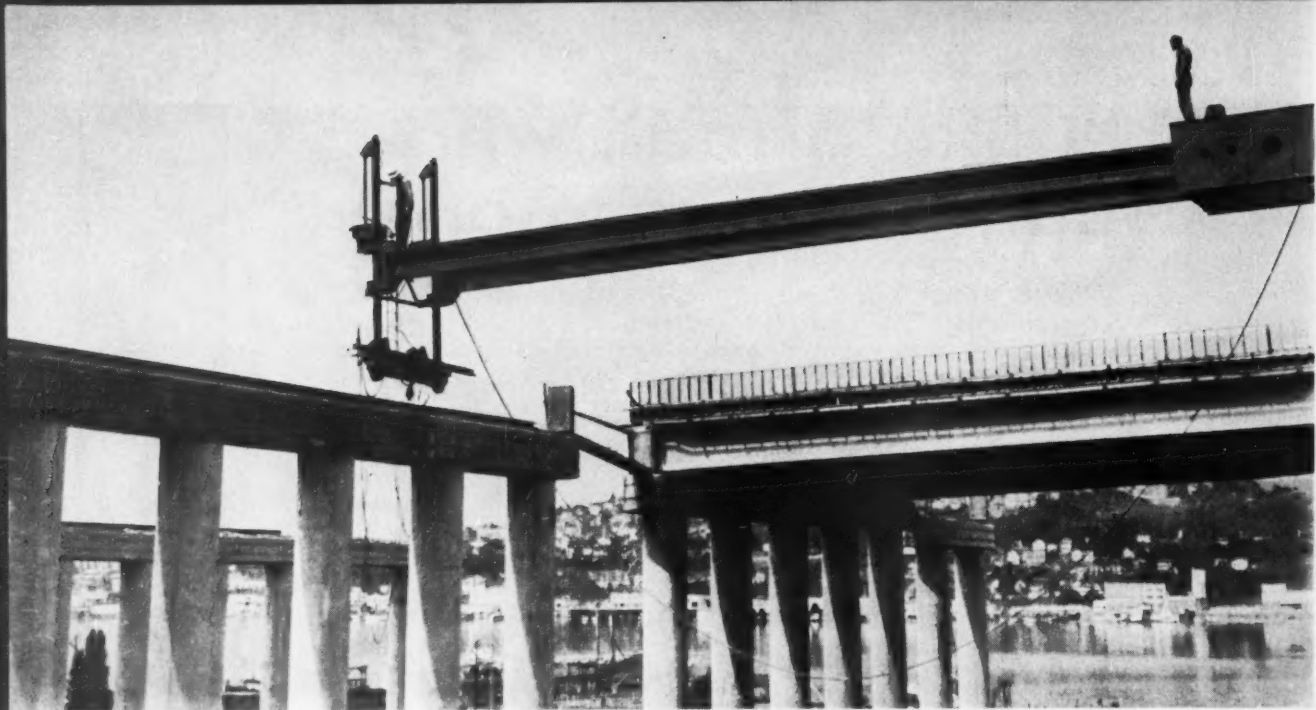


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CANTILEVERING—Beams 2 ft deep and 100 ft long are run from inside launcher's 110-ft box beams to land on far pier cap of span whose girders it's preparing to erect.

Telescopic Steel Launcher

In Seattle, ingenious self-advancing rig sets prestressed girders more than 90 ft long for highway viaduct.

Eliminating two 35-ton cranes, it cuts costs radically.

A GIRDER LAUNCHING device that telescopes its way along from span to span is more than paying for itself on its first job—the 2,727-ft Lakeview Viaduct section of a new freeway in Seattle. There the unit is setting 967 prestressed concrete girders up to 92 ft long and weighing as much as 27½ tons. But the launcher also can handle longer and heavier members expected to be used later in other sections of the freeway.

Cranes Ruled Out

Original plans called for placing the girders with two 35-ton cranes. But since the 2-ft-wide by 4½-ft-deep members sit atop bents up to 77 ft high, 100-ft booms would be required. Also, the viaduct is on a steep hillside, making footing for the rigs difficult even in good weather. And the job will extend through the rainy Northwest winter.

Therefore, Seattle joint-venture contractors Rumsey & Co.

and Morrison-Knudsen Co. had Pacific Car & Foundry Co. design and build the launcher. The rig eliminates the two cranes, costs less than one of them, reduces the size of the crew required, and makes all-weather operation possible. The contractor estimates that the launcher cuts the cost of girder placement in half.

The launcher weighs 50 tons. Basically, it consists of two steel box beams with another beam riding inside of each on rollers. End frames space the box beams so a girder can be lowered between them.

How Launcher Works

At the start of the operation, the launcher cantilevers part way across the span to be bridged. Then it pushes out its interior beams to bear on the concrete cap of the next bent of columns. Finally, the launcher pulls itself into place along these beams.

Two carriages riding rails at-

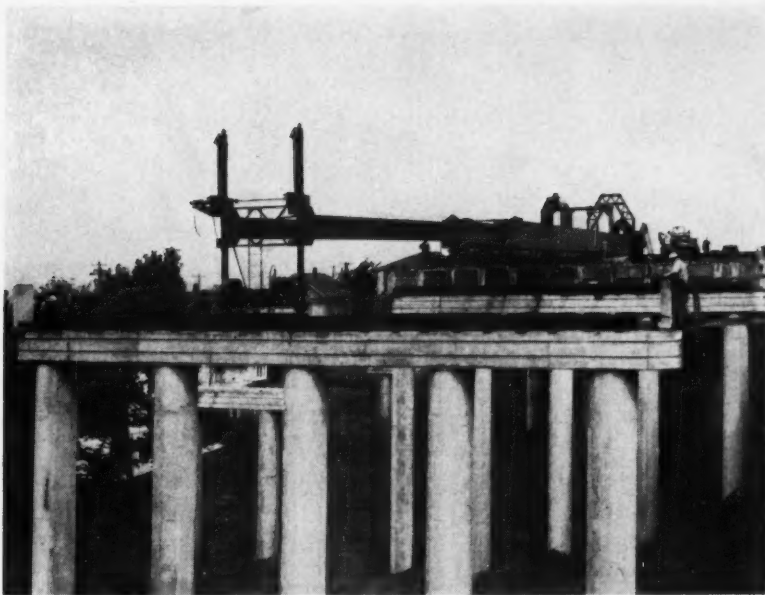
tached to the box beams handle the concrete girders and lower them into place. And transverse rails under the ends of the launcher allow it to move sideways to set all girders in a span before it advances itself again.

Rig Is 110-Ft Long

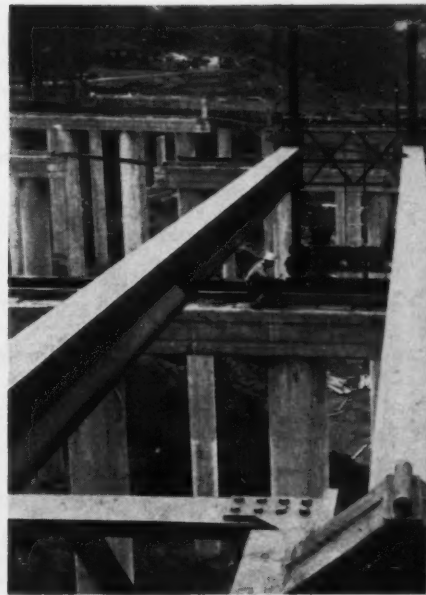
The launcher's box beams, 110 ft long, 2 ft wide and 4 ft deep, are made of A-7 high-strength steel. Side plates are ¾ in. thick, top and bottom are 1 in.

Spaced 9¾ ft on center, the box beams are tied together at the forward end by 8-in. channels. A portal frame made of 6-in. WF beams braces the rear. Also at the rear, a 15-in. double-flanged steel wheel is framed transversely into each box beam so the assembly can roll sideways.

The extension beams inside the boxes are 100 ft long. Built up of 5/16-in. plate and 15-in. 50-lb channels, they are 2 ft deep. Each beam rides between two sets of top and bottom rollers inside its box. One set is located at the forward end of the box, the other is 20 ft back. Starting 20 ft behind this set, bottom idler rollers are spaced 15 ft apart.



LANDING—Wheeled truck at base of assembly that supports end of launcher lands on transverse rail atop pier cap. Pier's 4-ft-dia prestressed columns are 14 ft c-c.



LEVELING—Two screw-jacks in beam-end assembly level launcher on viaduct grade.

Places Concrete Girders

The forward ends of the extension beams are tied together by a leveling assembly. That's necessary because the viaduct is being built both on a curve and a grade. Fastened to the end of each beam with four 1½-in. pins is a sleeve through which an 8-in. steel pipe can move vertically. A worm-gear threaded Carco jack suspends the extension beam from the top of its pipe. Jacks on both sleeves are powered by a single 7-hp Chicago Pneumatic air motor through a common shaft. At the bottom, the two pipes frame into a built-up transverse beam. Into this are fitted two 15-in. steel wheels for sideways movement.

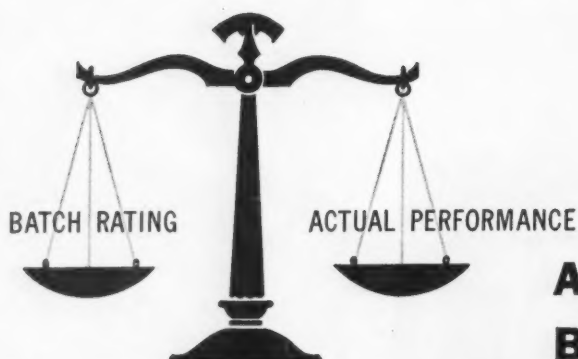
Box Beams Carry Rails

Completing the structural frame of the launcher are a series of stub beams, made by boxing pairs of 4-in. channels, that project slightly from one side of each box beam into the space between them. Welded to the lower edge of the beam's side, each series of stubs carries a line of 3½x3½-in. 40-lb railroad rail. The pair of them makes a standard-gage track.

continued on page 109



ADVANCING—With its two inner beams supported on the next pier cap, the launcher prepares to pull its box-beam assembly ahead. Total weight of the unit is 50 tons.



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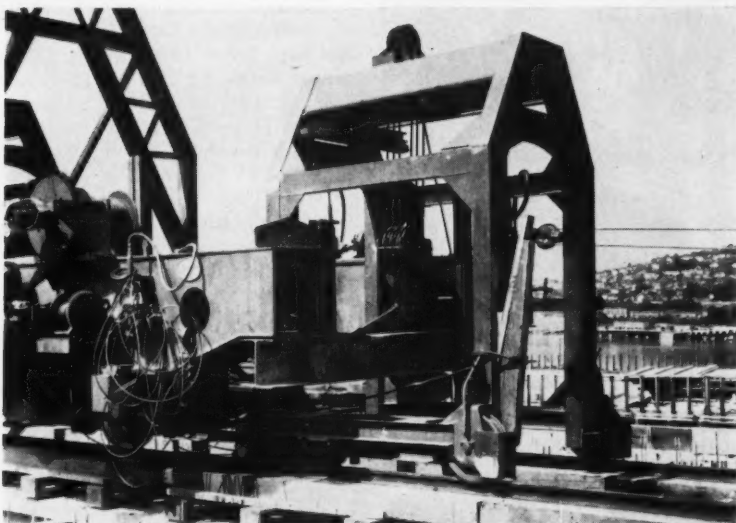
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LAUNCHER PLACES GIRDERS . . . continued



CARRIAGE—One of the two carriages that normally handle the concrete girders for the viaduct. Framed with 8WF17 members of A-7 steel, each has a capacity of 30 tons. This capability is developed by a 5-ton Beebe hoist through a six-part set of falls. Mounted on the carriage, the hoist is powered by a 3 1/4-hp Ingersoll-Rand air motor.

On this track ride two straddle-type carriages that handle the concrete girders for the viaduct. Framed with 8WF17 members of A-7 steel, each has a capacity of 30 tons. This capability is developed by a 5-ton Beebe hoist through a six-part set of falls. Mounted on the carriage, the hoist is powered by a 3 1/4-hp Ingersoll-Rand air motor.

Positioning the Launcher

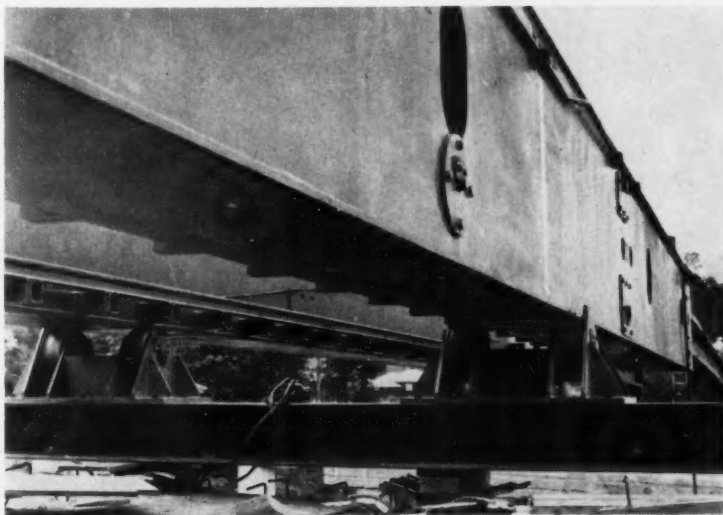
First move in positioning the launcher is to cantilever it out 30 ft beyond the end of the span it has just erected. The rig rides over a transverse H-beam fitted with sets of double rollers. To make the move, an air-powered winch on the rear of one of the box beams winds in a cable that passes through a sheave on the roller assembly and is dead-ended at the back of the launcher. During the operation, one of the girder carriages suspends the launcher's rear end.

The rear 80 ft of the 110-ft launcher acts as counterweight while the extendible beams next are run out. Because viaduct spans vary from 82 to 92 ft, the beams must cantilever 52 to 62 ft beyond the ends of the already cantilevered boxes before they can land their leveling assembly on the next pier cap. There its wheels ride a rail affixed atop a 12BP53 section extending the 60-ft length of 4 1/2-ft-wide cap.

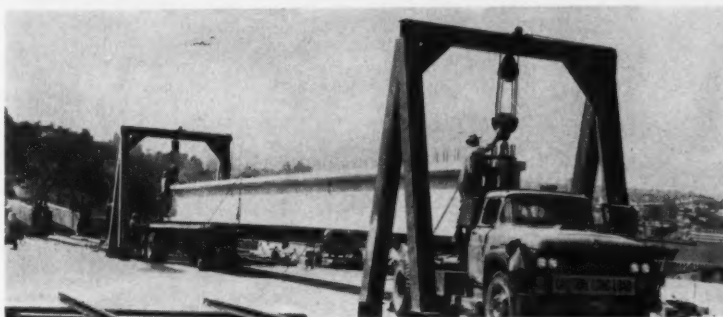
Power for extending the beams

comes from a 3 1/4-hp air motor on the rear of each box, beam, driving a 16-in. drum within the box. The drum carries a few wraps of 5/8-in. cable. Both ends of the cable are attached to the rear of the extendible beam, one end going directly to it. But the other end first passes through a sheave at the front of the box before going back to the point of attachment. Thus, when the drum turns one way, it pulls out the extendible beam. Reversed, it pulls the box out along the beam. Travel speed is about 7 ft per min.

When the box-beam unit completes its move ahead, a transverse rail is placed to carry its rear wheels. Next the concrete girder carriage raises the launcher's back end so the rollers under the box beams can be removed. Finally the carriage lowers the



ROLLERS—Box beams ride over a pair of roller assemblies as the launcher pulls itself out along the extendible beams it has already pushed out to the next pier cap.



GANTRIES—Air-powered hoists on two sturdy A-frame gantries remove girder from the truck and trailer that deliver the members to job site from contractor's casting yard.

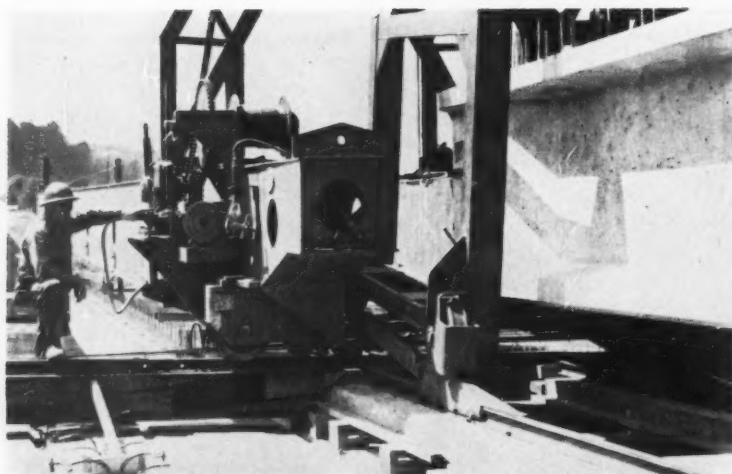
LAUNCHER PLACES GIRDERS . . .

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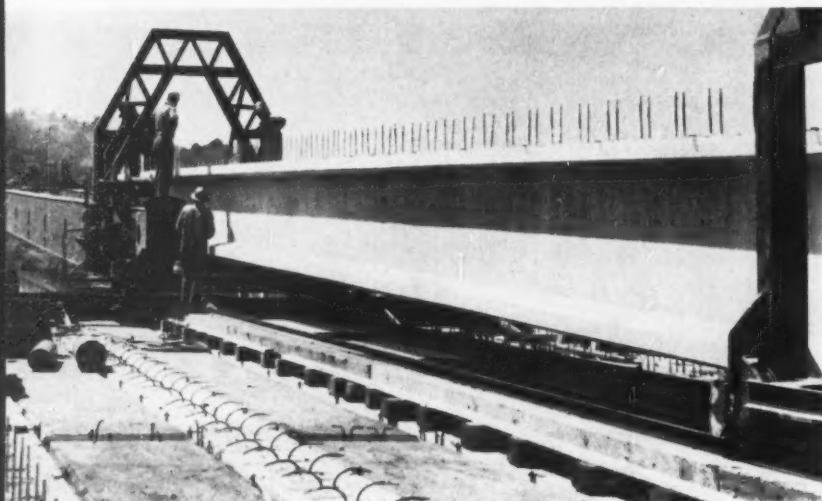
Carriages Move Safely Cradled Girders to Place



INTO CARRIAGE—Two rail riding carriages pick up girder for trip to launcher.



INTO LAUNCHER—Cradled in the carriages, the girder is pulled into the launcher. Here, at inclined track leading from deck to launcher, launcher's winch lends a hand.



ONTO SPAN—With its front-end carriage riding rails cantilevered inward from the launcher's box beams, girder continues its journey until directly over pier-cap seats.

launcher to its rail, and girder setting begins.

The contractors truck the pre-stressed girders from their casting yard about 15 mi away. They are unloaded by two 12x12-ft A-frames made of 12BP53 sections of A-7 steel. Each A-frame is fitted with hoisting equipment identical to that on the straddle carriages that handle the girders from this point on.

A 1/2-in. cable from a Skagit hoist pulls the two carriages into place astraddle the girder. After the girder is picked up, it is rested on a transverse steel bar temporarily inserted in each carriage. This prevents pendulum action during the subsequent move.

A 3/4-in. cable from the Skagit's second drum, reeved through a sheave at the far end of the box beams, pulls the carriages and their load to and into the launcher. During this operation the 1/2-in. cable acts as a safety hold-back.

Rig Helps Load Itself

A short incline leads from the track on deck to that in the launcher. To pull the girder carriages up it, a line from the launcher's move-up winch gives the Skagit hoist an assist.

With the girder now suspended above the pier caps, the launcher is moved sideways into position above the girder's final resting place. Anchored lines from air-motor-powered Beebe hoists on each end of the launcher's rail trucks handle this movement. Air for these hoist motors, and for all the others, comes from a 125-cfm LeRoi compressor on the viaduct.

Positioning completed, the carriage hoists raise the girder slightly for removal of its supporting bars. Then they lower it into place. The process is repeated until all girders for the span have been set.

A typical span calls for 12 girders. And there are from 22 to 33 spans in each of the three parallel 2,727-ft structures that make up the viaduct.

Girder placing procedure is to complete five spans of one structure, then move to a parallel one. Deck-slab concrete follows two spans behind girder placement. And it is poured half-width at a time so as not to interfere with delivery of girders to the launcher.

The six-man girder-handling crew nets four units per 8-hr day.

continued on page 112



NOTHING DIGS TRENCH LIKE A TRENCHER

**PRODUCTIVE
TOUGH
ACCURATE and**

EFFICIENT

No other type of excavating machine approaches the modern wheel-type trencher in trench digging efficiency. This Cleveland Model 110, for example, dug 500% more trench per day than the other-type excavator it replaced on the 11,000-foot utilities job shown above.

No excavating machine but the trencher is designed especially for trench digging. No other excavating machine compares in trenching productivity with a modern, full-crawler-mounted digging wheel.

No other excavator cuts trench to such accuracy of line, width and grade. The trencher's accuracy saves extra dirt handling, saves on repaving costs,

saves on surplus backfill material. Only Cleveland-type trenchers fine the spoil and place it neatly alongside the trench for fast, simple backfill and better, more complete compaction.

Clevelands dig better trenches, in more kinds of soils, in more terrains, than other-type excavators. They dig more efficiently on trench work of all kinds, on all sizes of trench from 8 inches to 52 inches wide. They dig down to 8 feet 10 inches deep and slope trench up to 12 feet wide across the top.

Investigate now the profit potential of a modern trencher—an efficient, fast, dependable Cleveland Trencher.



**CLEVELAND
TRENCHER**

THE CLEVELAND TRENCHER CO., 20100 ST. CLAIR AVE., CLEVELAND 17, OHIO

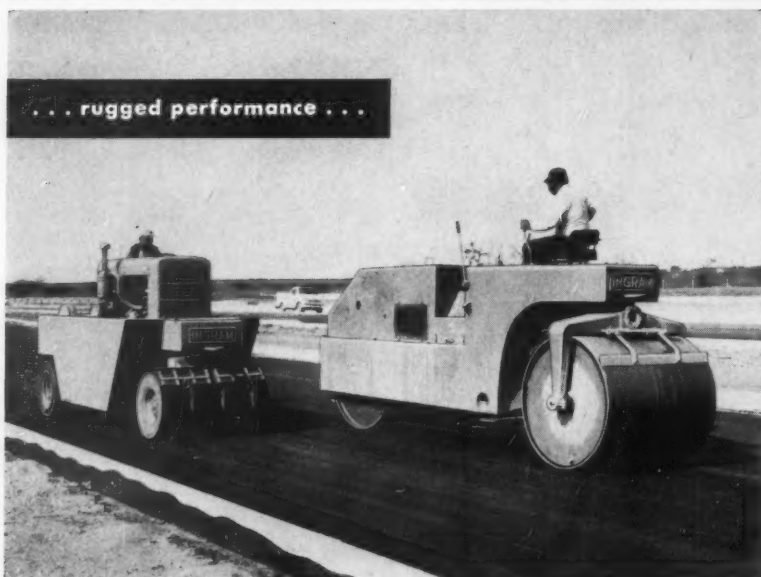
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LAUNCHER PLACES GIRDERS . . . continued

It completes one span a week, which includes 1½ days for moving. Not a single girder has been damaged in placement.

For the joint-venture contractors, John Rumsey, Jr., is project manager and Robert Nesser is superintendent. Gene Chamblin is resident engineer for the Washington Highway Dept.

INTO PLACE — Centered over girder seats, launcher carriages lower member.

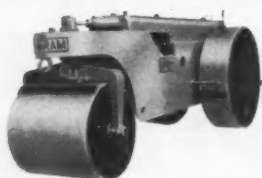


Proved by contractors with compacting problems

Ingram Rollers continue to prove their ability to overcome modern compaction problems to the construction industry. Backed by 30 years of outstanding engineering experience, Ingram Rollers provide rugged performance with minimum maintenance. Shown above is the Ingram 10-ton 9-wheel pneumatic roller working with an Ingram 8-12 ton tandem roller.

INGRAM self-propelled **pneumatic-tired** rollers available in models ranging from 10 to 35 tons; **3-wheel** rollers, 6, 8, 10, 12 and 14 tons; **tandem** rollers 3-5, 4-6, 5-8, 8-10, 8-12, and 10-14 tons. For more information contact your nearby Ingram distributor or write to Acme Iron Works, P. O. Box 2020, San Antonio 6, Texas.

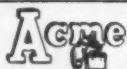
INGRAM ROLLERS



Ingram 12 ton



Ingram 18 ton



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CM-T1/3

Big Savings on Big Jobs

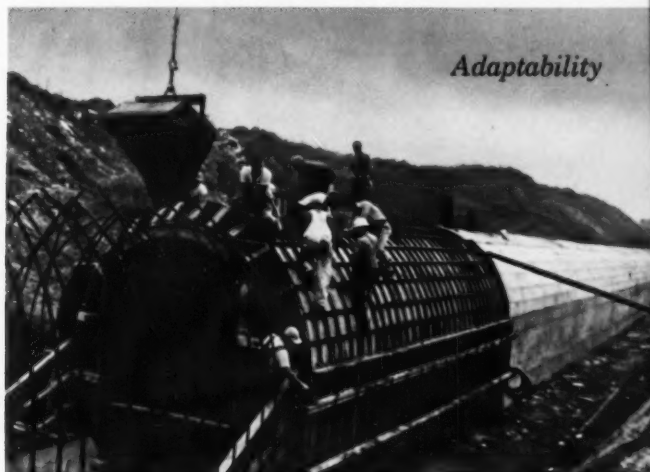


Dependability

Pour 100 Yds Concrete Per Hour

The job: Chicago's big new filtration plant. The need: forms which would take the abuse of fast, frequent pouring; also forms easily moved. Solution: Symons Steel-Ply, a form which past performance showed would stand lots of abuse, give many reuses and which could be used for all types of wall construction; straight, curved, battered or cut-up. Typical pour: 100 yds of concrete per hr.

Contractors: S. N. Nielson Construction Co., and Paschen Contractors, Inc., both of Chicago, Illinois.



Adaptability

Jumbo Forms Simplify Sewer Job

Just 3½ months: this was the contract deadline on this big job—building a sewer of pipe 13 ft in diameter and 15" thick. Inside forming here consisted of three sets of Symons jumbo forms similar to a gang form section. Jumbo forms had hinged ribs and rode on plank rails. Each section was 32' long and consisted of 12" fillers. Outside forming was made up of 14" and 16" fillers.

Contractor: National Engineering and Contracting Company, Cleveland, Ohio.

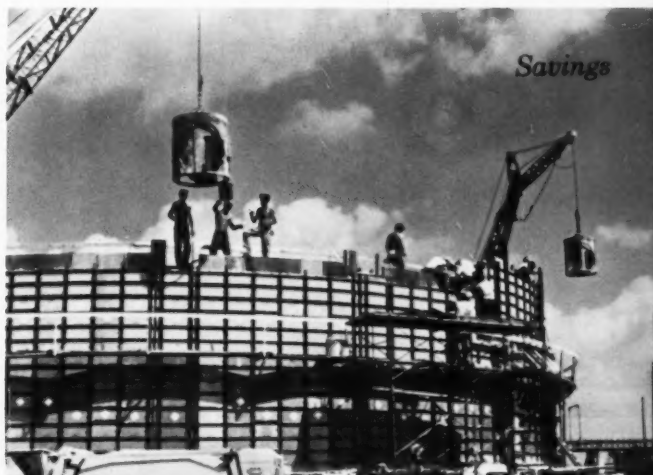


Speed

Ganging Saves Weeks of Work

With only eight months to build the piers and sub-structure for nine twin highway bridges, this contractor relied 100% on Symons Steel-Ply Forms. Assembly, stripping, movement and set-up—all were handled by crane. Concrete was poured at the rate of about 3 lineal feet an hour with each pier and sub-structure poured in a continuous operation.

Contractor: Moore Brothers Construction Co., Verona, Virginia



Savings


Special Brackets Cut Costs

How to form a series of 80 ft diameter tanks was the big problem on this job. Symons Steel-Ply Forms solved it by permitting pouring in two lifts—the first, 10'6" high, 22" thick—the second, 14'6" high, 14" thick. In addition to supplying the forms, Symons furnished three sizes of special haunch brackets. 22 brackets were reused four times at a cost far below that of job-built brackets.

Contractor: Calumet Construction Company, Hammond, Indiana.

For the complete story on each of these jobs, write us. Ask also about our free engineering service . . . rental-purchase options . . . and complete-line catalog.

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 **Symons CLAMP & MFG. CO.**

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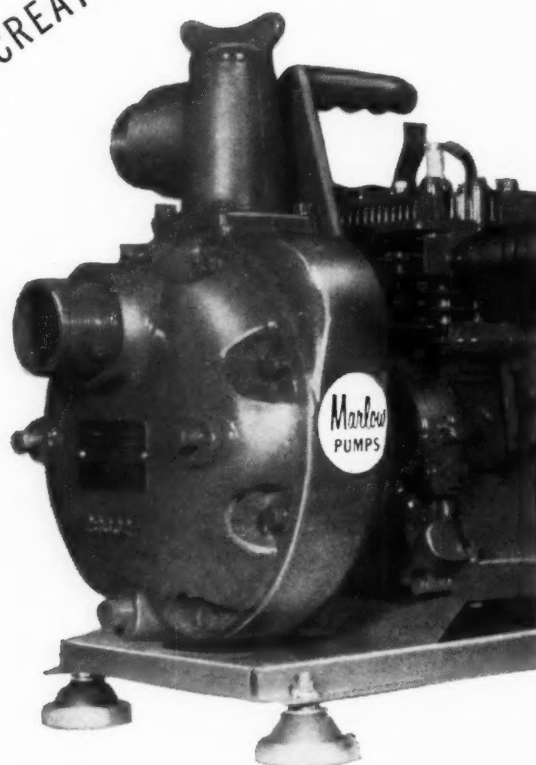
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114

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CONSTRUCTION METHODS

CATERPILLAR REPORTS

On the following pages:

The right machine for the right job

How to move 1,300,000 yards of dirt—with a Motor Grader!

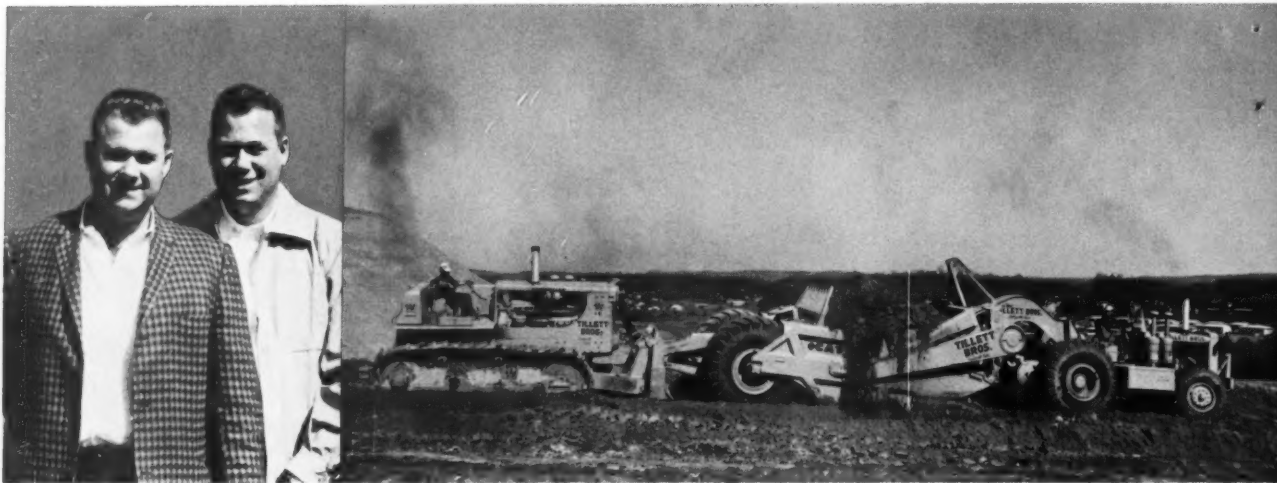
Can you do a shovel's work cheaper with a Cat loader?

The inside story on lifetime lubricated rollers



Many contractors report methods they use (or have developed) that save money. Here's one contractor who isn't satisfied with just a cost saving method—he tries for at least a double savings. It's a philosophy of

The right machine for the right job



1.2 million yards moved in the first 60 days despite miserable weather—that takes some special doing. But it is almost routine for Tillet Bros. Construction Co., Inc. Their methods pay off with lowest cost, highest production. Twelve years ago Joe and Gerald Tillet owned one machine and dug farm ponds. Today they are one of Tennessee's largest contractors with over \$4 million of Interstate work. They personally stay on top of every job, flying from job to job or keeping in touch by radio.

THE RIGHT SCRAPER FOR THE RIGHT JOB

There are obvious advantages in using two-wheel scrapers on some jobs and four-wheel units on others. But the Tilletts get double savings—they use both on the same job. On an Interstate 75 job near Chattanooga, they are moving over 4 million yards of tough chert. Prime movers: three Cat DW20-482s (34 cu. yd. heaped) and eleven DW21-470s (27 cu. yd. heaped). Most contractors avoid mixing their fleet, preferring either two-wheel or four-wheel rigs. The Tilletts find more savings with a mix. On 1500-ft. hauls both units move about the same amount of dirt. But on longer hauls, the

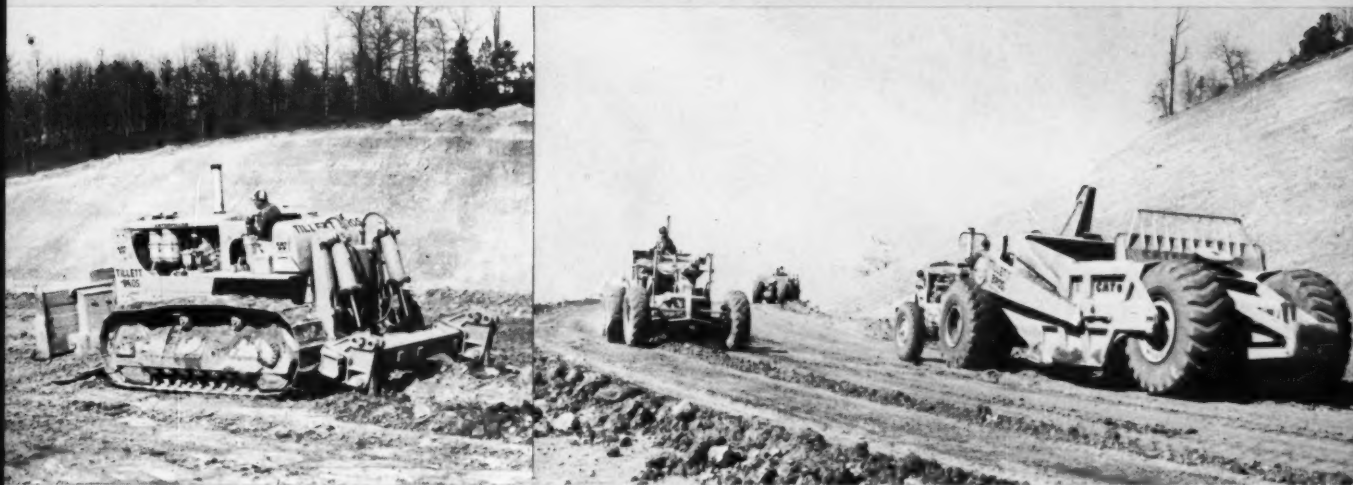
faster, bigger DW20-482s turn in more production at lower cost. On shorter hauls, the DW21s have the advantage. Since hauls vary on a single job, the Tilletts take advantage of *both* types.

They have definite ideas about which machines and what methods are best. For example, on another big highway project near Knoxville—where they ran into rock and muck, and hauls were short—they depended primarily on Cat crawler-drawn scrapers. Tillet Bros. use their D8-463s (29 cu. yd. heaped) for the rough and short haul work, their fast-moving wheel units for big production. The crawlers don't have to wait for good conditions; they can move right in through mud and steep grades to build up the haul roads, open cuts and fills. *The right machine at the right time—money saved, time saved.*

SPECIALIZED MACHINES—OR “MULTI-PURPOSE”

Every job has a wide variety of dirt-moving tasks, from opening up and stripping to long hauls. Some contractors have tried “multi-purpose” machines in the attempt to handle all these conditions with one type rig. The Tilletts tested them too.

-right now



But they found the *right* machines will do it better, faster and cheaper—and with lower initial investment. They open up the entire job as quickly as possible, building several haul roads so, in bad weather, they have a choice of work to do. This lets their rubber-tired machines work efficiently regardless of weather. That's how they were able to move 1.2 million yards in the first 60 days on the Chattanooga job, despite miserable winter weather.

Wheel scrapers are supposed to be high-speed haulers—the Tilletts do everything possible to make sure they are. Haul roads are built 50 feet wide for easy passing at high speed. High speed isn't enough; they want *highest* speed from each unit. Most contractors know haul roads should be kept smooth and hard. The Tilletts make sure their roads are the best. Four Cat Motor Graders work constantly on their roads. Double savings? Yes! Their haul units barrel from cut to fill almost all the way at top speed, cutting cycle time. And, as Gerald Tillett puts it, "It doesn't take long to chew up ten tires on a rough haul road. And ten tires pay for a motor grader."

Loading techniques are important too. Here

again, specialized machines pay off. D9s with rippers insure fast loading of stubborn material; D9s with cushion dozers speed pushloading. Power shift transmissions better match the crawlers to their work and help increase production throughout a 10-hour shift.

SPECIALIZED LOADING

Every angle is watched to speed loading to match Tilletts' high production schedules. "We've got to keep dirt moving," Albert Jones, superintendent, told us. "We start ripping as soon as the loading slows down or the tires start spinning. (He's using a power shift D9 with straight-shank Cat Ripper.) This power shift D9 rips fast enough to stay ahead of all 14 scrapers—and that's going some! It's faster and cheaper than blasting... and it breaks up the material so it's easier to load."

The big D9 he's using has plenty of power to shatter tough rock, the ruggedness to stay on the job day after day. With split-second, no-clutch shifting, the operator can shift down for tougher going and right back up again (without loss of momentum) for faster ripping when conditions permit.

(Continued on next page)



(Continued from previous page)

Since shifting effort is so reduced, output is higher because the operator stays fresher, and ripping keeps scraper loading at maximum efficiency.

Every second in the pit is considered important. The Tilletts load down hill whenever possible; they tandem push when it will speed loading and cut their cost per yard. Recently they added another cost cutter—9C Dozers on their D9 Pushers. These inside-mounted, *cushion* dozers let the D9s swing in close behind the scrapers and make contact at *three miles per hour*, without jolting either machines or operators.

"This cuts 10 to 15 seconds off loading time," Gerald Tillett estimates. "These cushion dozers let us make fast contacts, using both pusher and scraper momentum to pick up loads faster. And we've still got a dozer to dress up the cut and hog out boulders. A smooth cut means our scrapers get through quicker." And on-the-go, up-and-down power shifting means haul units are boosted out faster, pusher gets in place faster for the next load.

THE RIGHT MACHINE PAYS OFF

Working machines as they do, you might expect maintenance costs to be high. On the contrary, the ease of servicing and maintaining Cat-built machines

appeals to the Tilletts, too. They run their own maintenance shop on the job... find parts are always easy to get in a hurry from their Caterpillar Dealer. And his service department and field service are always available when needed. Operating costs are kept low by such things as lifetime lubricated rollers on the Cat track-type Tractors. Metal-to-metal seals keep lubrication in, dirt out... need no servicing until rebuilt. There is economy in their Cat Diesel Engines that operate on low-cost fuel—an important consideration when you're burning 1800-2000 gallons a day.

Joe Tillett explained their policies: "We buy Cat-built equipment because we're convinced it's the best in the business. And we trade 'em often to keep up with the latest improvements. (Typical of the whole Tillett operation, all machines on the Chattanooga job, except one Cat No. 12 Motor Grader, are less than three years old.) We pay the operator the same wages regardless of a machine's condition, but he can move more dirt when he has a good machine under him. We can't afford to have anything but the best equipment there is." That's the attitude of the Tilletts of Tennessee, an organization that in 12 years has grown from one used D6 to an 82-machine, million-dollar operation.

CAN YOU SPOT THE SAVINGS IN THIS PICTURE?



(Clue: it's a matter of adapting general-purpose equipment to a specialized situation)

This isn't the kind of earthmoving spread you'd expect to see on a job involving 1,300,000 yards of dirt. But the W. A. Smith Construction Co. of Kansas City, Mo., will tell you it works just fine, and that's what counts. The job is clearing the way for a new Missouri Pacific Railway Co. switchyard at North Little Rock, Ark.

Several methods were considered before the Smith Co. settled on this Cat No. 14 Motor Grader with Ulrich Domor elevating grader.

Scrapers, naturally, got consideration, but the haul—three miles one way over paved roads—ruled them out. A shovel would not have been fast enough. Another possibility was the use of a loader with a tractor to push and another to pull—but that looked like a hefty investment in equipment for a job as specialized as this.

So it narrowed down to the No. 14. How did production look? Promising. Faster than a shovel, not quite as fast as a loader-tractor team. But substantial savings on the investment in the No. 14 more than offset the modest production increase that would have been possible with the tractor-drawn loader.

And there was another important consideration that made the No. 14-Domor combination look even

more attractive. Once the job was complete, the No. 14 would be ready to take on a wide range of routine jobs.

As it turned out, Smith's choice was a wise one. Despite poor footing with fairly high rolling resistance, production was high and profitable. With plenty of lug in its 150 HP turbocharged engine, the No. 14 with Domor kept up with the 19-truck spread easily. Power-boosted steering and leaning front wheels eased the operator's job, let him load 425 to 500 trucks in a ten-hour day. Loading costs per bank cubic yard were only 1.22¢.

Any method that gets dirt costs down so low is worth remembering. When you have to move a lot of earth in a specialized loading area, check out the No. 14-Domor elevating grader combination before you invest in other specialized equipment.

There's a good chance you'll get the production and cost combination you want—and no matter how tough the job, you can be sure that the No. 14 can stand up to it. Because it has such quality features as the exclusive Cat oil clutch (up to 2000 hours without adjustment) and triple box section main frame, you know that your No. 14 will be ready to take on plenty of other tough jobs in the years to come.



They're doing a shovel's work with a Cat 977 Loader

If you think you need a shovel for a job but don't have the money to buy one—you could be in luck. Maybe you'll end up, like Roy Ables, with a machine that does a shovel's work at half the price! Here's how:

Back in 1957, Mr. Ables took office as road commissioner and convinced Lincoln County, Tennessee, that they'd be better off if they produced their own crushed rock, rather than depend on river run gravel. They'd get more select material for road maintenance and they'd be able to work all year 'round.

The only hitch was that he didn't get quite enough money. A crusher, a couple of trucks, impactor, compressor and drill ate up most of the \$125,000 he was allotted. There wasn't enough left for the 1-yard shovel every-

body thought he had to have to run the quarry.

That was about the time Caterpillar was introducing the new 977 Series E Traxcavator Loader and the Caterpillar Dealer suggested he try it in place of a shovel. It cost only half as much.

Most quarry men in the area scoffed at the idea. But the dealer was willing to let Mr. Ables try the 977 for a month—no strings attached. He did. And the loader is still on the job.

That 977 has spent about half its life in the quarry, handling 1000-1500 tons of shot rock a day. The rest of the time, it has been used out on the county roads for clearing and grading, and in stockpiling around the crusher.

The only repairs in over 4000 hours have been two broken idlers and two

sets of bucket teeth. (The machine is equipped with a standard 2¼-yd. bucket.) There has been no track work needed on the machine, a credit to the good care Mr. Ables and his operator give the machine. The Cat oil clutch has 4130 hours of service and it has been adjusted only twice.

"In many ways," says Mr. Ables, "this 977 is better than a shovel. It can pick up oversize rocks and carry them off out of the way. And it is its own clean-up machine (a shovel would need another machine to keep the quarry floor clean)."

The current Series H 977 can out-produce the Series E machine by 50% or more on many jobs. The reasons the 977H can handle the work of a 1½-yard shovel in many applications are the power shift transmission and



at half the cost

the faster, more powerful hydraulics plus the exclusive automatic bucket positioners. In addition, when the work is intermittent, the loader can double on other jobs around the quarry. Most important, it does the work with a minimum of maintenance, yet costs only half as much as a shovel with comparable production.

Roy Ables is convinced of the merits of the Caterpillar track-type Loader in handling shot rock. He says, "When I need a new machine I'll get another Cat Loader, put it in the pit, and use this one on the road."

Check with your Caterpillar Dealer if you have a shovel job that might be handled by a Cat wheel or track-type Loader. He has the facts you need to make a sound decision that can save you money.

THE INSIDE STORY

How Cat Rollers Are Designed
to Eliminate Maintenance and Give Longer Life

Simply stated, Cat lifetime lubricated rollers eliminate maintenance by keeping the lubricant in and dirt and grit out. There is no need to replace the lubricant—because it can't escape. There is no need to change the lubricant—because it can't get dirty. Hence, Cat rollers are maintenance-free until rebuilding time.

The chief reason for this maintenance-free performance is the exclusive Caterpillar floating ring seal, illustrated at right.

Each seal consists of two metal floating rings of a hard alloy. The inner surfaces of the rings are finished to a mirror-like smoothness and fit so perfectly that it is practically impossible for lubricant to get out or grit to get in.

In addition, synthetic rubber "O" rings behind each floating seal keep even, constant pressure on seal surfaces and can take extreme shock loads without leaking.

Cat roller seals are noted for long life and for reusability at rebuild time. One example is a contractor in the West whose rollers were rebuilt at 5700 hours. Seal wear was only 35%—so small that they could be reused.

The same reusability is characteristic of the bushing type bearings found in Cat rollers. These bearings have greater load-carrying ability than ordinary bearings and can normally be reused when the rollers are rebuilt.

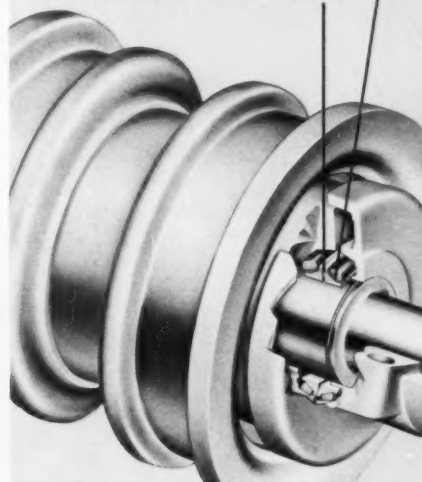
Freedom from time-consuming lubrication maintenance is only one advance of the new Cat rollers. Higher hardenability steel also strengthens each track roller for longer life. More steel under the rim load area gives greater support and resistance to peening. Shafts have larger diameters with increased beam strength.

Caterpillar lifetime lubricated rollers are standard on the D9, D8, D7, D6 and D4 Tractors and the 977, 955 and 933 track-type Loaders.

HOW IT SEALS

"O" rings maintain a constant load on metal rings.

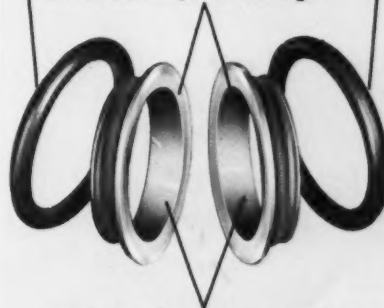
Lapped surfaces of metal rings prevent passage of lubricant or grit.



FLOATING RING SEAL

Special synthetic rubber "O" rings are resistant to oil, heat (up to 200° F.) and cold (down to -40° F.).

Seal surfaces are lapped to mirror-like surface for perfect sealing.



Metal alloy rings are much harder than the best file steel—are rust and corrosion proof.

Special report to users of Caterpillar equipment



New Cat parts stretch dollars "down where the digging's going on"

That's more than just talk! More and more users are conducting their own field trials of ground engaging tools—tips, bits, teeth and edges—to determine which brand gives them the best performance-cost balance. And time after time, they find that genuine Caterpillar ground engaging tools outclass

all comers—in production and over-all economy!

Take Cat cutting edges. These edges have been contractor-tested with most of the market's leading brands all over the country. Results: Cat edge wear life—10-60% longer. Cat edge cost—15-50% less per hour. Think of that in terms of dollars!

HERE'S A LOOK AT RECENT FIELD TRIALS ON SCRAPER CUTTING EDGES:

Two DW21-470 Scrapers, one with Cat *standard* edges and one with popular brand *thick* edges, were put to work "side-by-side" by a contractor in hard, red clay on an Interstate Highway job. His findings:

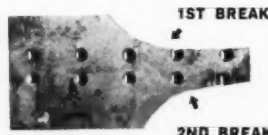
Brand	Price	Hours of Life	Cost per Hour
Other	\$121.22	1060	\$.114
Cat	\$128.28*	1360	\$.094

HIS SAVINGS WITH CAT EDGES — 17.5% PER OPERATING HOUR

*Test completed before recent new low price of \$102.30 effective.



CATERPILLAR



OTHER BRAND

A Cat $\frac{7}{8}$ " stinger and another brand *one inch thick* were split in half and a section from each installed on *same* DW21-470 Scraper working in decomposed lava with embedded basaltic boulders. Other brand section broke after 48 operating hours, was reversed but broke again two hours later—a total of 50 hours of life. Cat *edge wear during period was $\frac{1}{4}$ "*, other brand $\frac{1}{2}$ ".

Your Caterpillar Dealer has the facts on many of these tests—go over them with him and start to save more now.

Caterpillar continually up-dates its line of ground engaging tools. Some of the newcomers to the line that "stretch your dollars" are: new self-sharpening end bits and ripper tips, patented reversible router bits, and new-design scarifier teeth for Motor Graders. These new money-savers keep production high, costs down.

For the best in new and used machines, and the best in parts and service—see your Caterpillar Dealer

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

CATERPILLAR

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Truck Cranes carry the load



*Under load or on the road
nothing handles like a Koehring
... see your distributor today*

MODEL	MOUNTING	LIFT CAPACITIES rated at 85% of tipping load with outriggers
218	3-Axle Truck or Self-Propelled Cruiser	36,000 lbs at 10-ft radius
305	3-Axle Truck or Self-Propelled Cruiser	50,000 lbs at 12-ft radius
330	3-Axle Truck	60,000 lbs at 15-ft radius
445	4-Axle Truck	90,000 lbs at 12-ft radius
555	4-Axle Truck	110,000 lbs at 12-ft radius

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K105

Caisson drilling for a warehouse project required special techniques to fight ground water and special equipment to permit drilling indoors where clearance was low.

INDOORS

Tough Caisson Special Rig,

OUTDOORS AND INDOORS, foundation problems plagued the contractor on a warehouse expansion project at Toledo, Ohio.

Outdoors, the contractor ran into ground water during the drilling of 130 caissons for a two-story, 121,000-sq-ft addition to a warehouse for Libbey Glass. Special techniques were necessary to complete the caissons.

Indoors, a 25,000-sq ft second floor was constructed on concrete columns supported on caissons. Lack of headroom forced the contractor to modify the boom of a drilling rig so it could work under the existing roof during caisson drilling.

The Lathrop Co. of Toledo is the contractor on both phases of the warehouse expansion project. Their engineers used steel casings during caisson drilling to keep water out of the holes on the outdoor portion of the job. To install the indoor caissons, the modified boom of the drilling rig was equipped with a two-piece Kelly.

Average depth of the 3-ft-dia outdoor caissons is 35 ft. The top 20 to 25-ft layer of soil at the site contains boulders, glass cullet, and debris that had been dumped into a swamp. And ground water plagued the drillers from the surface down to a depth of about 20 ft.

A "mudding in" procedure similar to that used in oil fields was used to drill the caissons through the surface layer of poor soil. As each hole was drilled down to 25 ft, water was pumped into it to prevent the sides from caving in after dirt was removed.

As soon as each hole was drilled down to a firm layer of soil, the contractor installed a $\frac{3}{8}$ -in.-thick steel casing to seal off ground water so the hole could be dewatered. A casing was inserted into each hole and screwed into the firm material. Water was baled out with a bottom dump bucket handled by a crane.

When a hole was dry, a smaller size auger was attached to the Kelly and the hole was continued down to the required depth. Then the caisson was belled out to a 9-ft diameter and concreted.

The steel casing was withdrawn after concrete was poured into the caisson. To prevent flowing ground water from damaging the concrete, Lathrop first filled a caisson to the top of the casing with concrete. Then, the casing was withdrawn slowly, and additional concrete was poured into it to keep the top of the caisson at the correct level.



CUT-DOWN RIG—For indoor drilling, short jib section on the boom stub replaces Link-Belt crane's normal 70-ft boom. Because the clearance is only 25 ft, a two-piece telescoping Kelly was added to permit handling of auger and belling bucket.

Job Calls for New Methods

OUTDOORS

When concreting was completed, steel dowels were set in the concrete and columns were formed and poured on top of the caissons. A concrete slab for the ground floor was poured at grade, and a 9-in. slab was poured for the first floor. It was formed with Pecco shoring supported on 4x6's.

Work on the indoor caissons was more complicated because the modified drilling rig had to be used. Available headroom from the concrete floor to the bottom chord of the roof trusses was about 25 ft but the drilling rig normally needed nearly 70 ft of boom to install caissons.

To cut down on the needed headroom, Lathrop designed and built a short jib section that was mounted on the boom stub of a Link-Belt crawler crane. The modified boom was just short enough to fit under the roof, but a special short two-piece telescoping Kelly was needed to permit manipulation of the drilling and belling buckets.

This slowed down the operation, but Lathrop still completed the nine caissons in less than a week. The indoor caissons also are 3 ft in dia, but they are only 20 ft deep and are belled out to a diameter of 7 to 9 ft.

An additional problem on the indoor caissons was the lack of access for moving the drilling rig to the plant. The Link-Belt crane was hauled on a lowboy trailer to a railroad spur near the site and then transferred to a flatcar that was pushed to a loading platform inside the building.

The drilling table and Kelly bar were attached to the rig only after it was moved into position on the building's floor. After the job, the rig was disassembled again so it could be moved away.

The second floor was completed by installing forms and reinforcing steel and pouring concrete. A Buck Hoistower lifted concrete to the second floor level and dumped it through an open window into a hopper. Gar-Bro two-wheel concrete buggies hauled the concrete from the hopper to the slab.

Superintendent for The Lathrop Co. was Ernie Fulkerson, and caisson foremen were Al Houston and Everett Short. Bob Parks was carpenter foreman.

The warehouse addition project was under the direction of William P. Milbratz, chief construction engineer of the administrative engineering dept. of Owens-Illinois Glass Co. Darrell H. Fox supervised the field work, and David Wisniewski and Harold Gehm handled engineering.



(Top) **DRILLING**—Auger drills the caisson through a steel casing installed in the hole to prevent ground water from flowing in. (Bottom) **BELLING**—Belling bucket completes hole by enlarging the bottom to a 9-ft-dia when the proper depth is reached.

Savings in engine costs alone make the "Euc" C-6 today's best tractor buy


In the Euclid C-6 you get the advantages of job proved power train components... the reliability of the GM 6-71 engine, Allison Torqmatic Drive and Euclid's famous planetary drive... that help keep downtime to a minimum. You get designed-in service accessibility that's unsurpassed by any competitive crawler... servicing or complete removal and replacement time is well below that required for comparable tractors.

You get a big advantage, too, in the lower cost of engine replacement parts... savings that cut your maintenance expense to the absolute minimum. For example, pistons and rings for a competitive engine are 162% higher in cost than for the GM engine; a water pump 243% more; a block 270% more; and replacement of a complete engine, from fan to flywheel, costs almost twice as much in the competitive crawler. These savings, plus faster repair and replacement times, are some of the reasons why owners have found the "Euc" C-6 is the lowest cost tractor in the 200 h.p. class.

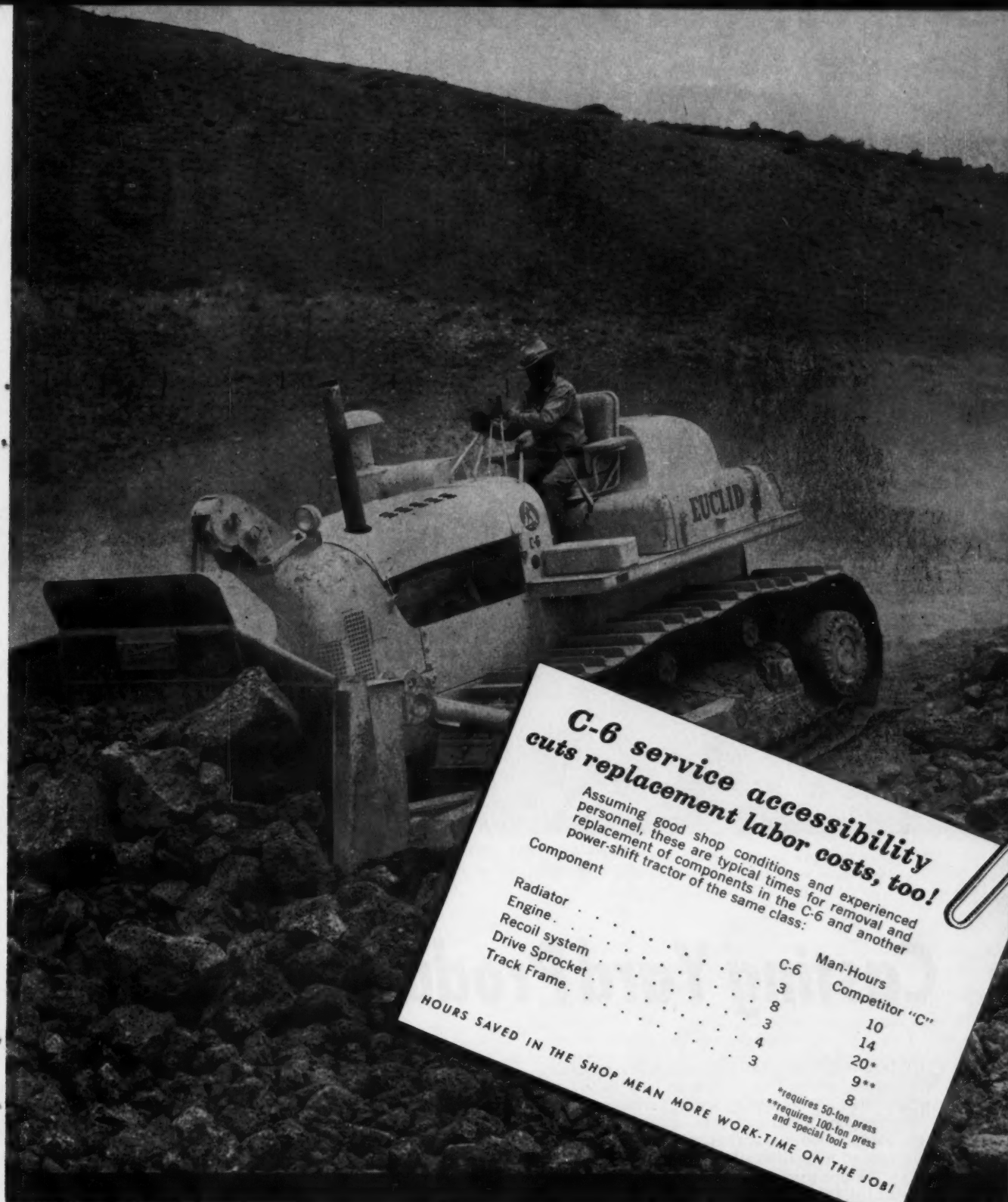
EUCLID Division of General Motors
Hudson, Ohio

*Plants at Cleveland and Hudson, Ohio
and Lanarkshire, Scotland*

*Full-power shift... fast-as-a-fox
maneuverability... and greater
over-all work-ability!*



Have your dealer give you all the facts and figures on the C-6... you'll find that in production and maintenance cost this "Euc" gives you a better return on investment.



C-6 service accessibility cuts replacement labor costs, too!

Assuming good shop conditions and experienced personnel, these are typical times for removal and replacement of components in the C-6 and another power-shift tractor of the same class:

Component	C-6	Man-Hours Competitor "C"
Radiator	3	10
Engine	8	14
Recoil system	3	20*
Drive Sprocket	4	9**
Track Frame	3	8

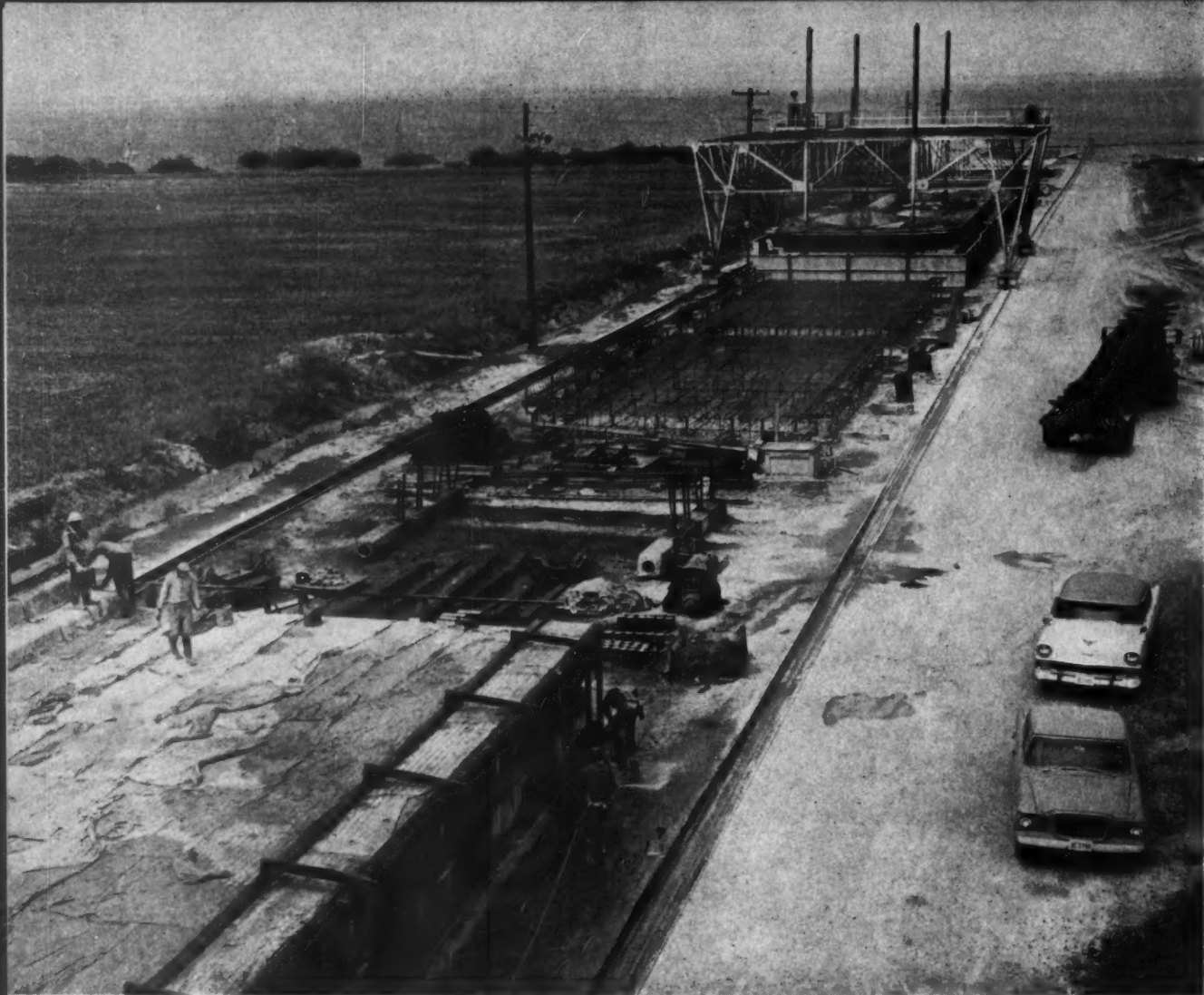
*requires 50-ton press
**requires 100-ton press and special tools

HOURS SAVED IN THE SHOP MEAN MORE WORK-TIME ON THE JOB!



EUCLID

FOR MOVING EARTH, ROCK, COAL AND ORE



BRIDGE ASSEMBLY LINE—The prestress yard is 50 ft wide and 2,000 ft long. Steel tying, concreting, curing, and inspection take place at various stations in the yard.

Casting Yard Produces Complete

THE LONGEST BRIDGE in Texas, a 2¼-mi causeway across Lavaca Bay, is cast on land in 140-ton sections that are erected by a unique floating crane.

The sections include girders, diaphragms, roadway, parapet walls, sidewalk, and half the median—all poured monolithically.

The 194 prestressed spans are cast in a yard set up near the Port Lavaca job site by the contractor, Elmer C. Gardner, Inc., of Houston. Each deck section is 30 ft wide and 60 ft long.

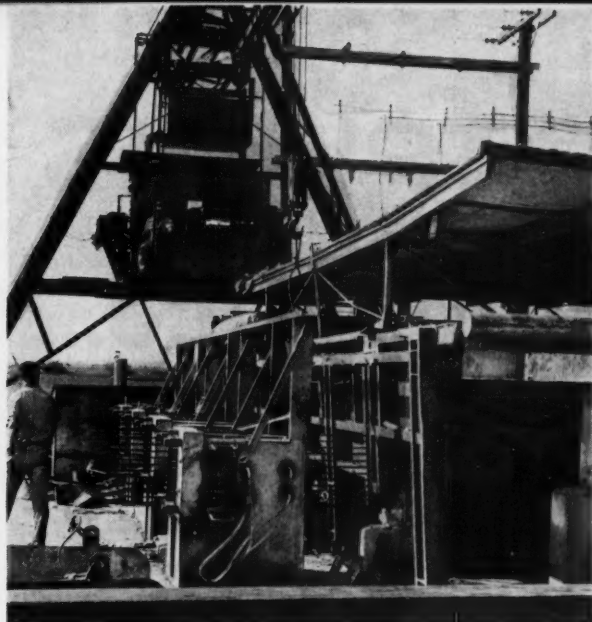
The 2,000-ft-long prestress yard resembles an assembly line. At one end, hydraulically operated steel forms hold concrete for the deck sections; at the other end, completed sections are loaded onto barges for the trip to the bridge site. In between, there are stations for tying reinforcing, cleaning form bulkheads, and curing finished sections.

Two sections are cast simultaneously. The cycle time is about 32 hr, and the crews work around the clock. The floating crane erects an average of two sections per day—three sections when the water is calm. To maintain a continuous operation both on land and on water, a storage area for completed deck sections is located near one end of the casting yard.

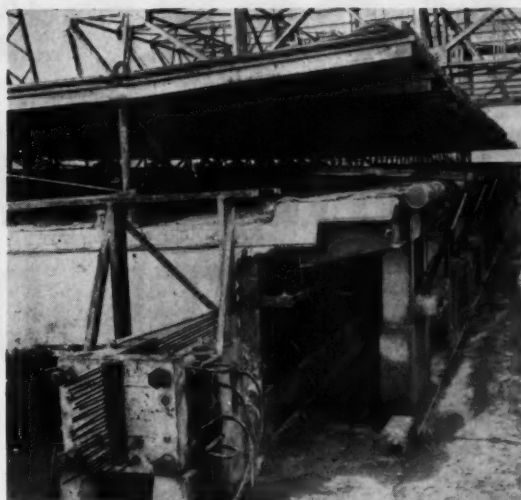
The yard also turned out 1,988 prestressed piles from 68 to 98 ft long. They support poured-in-place column and beam bents that carry the prestressed decks as well as one 280-ft steel span over a navigation channel.

Power-Operated Forms

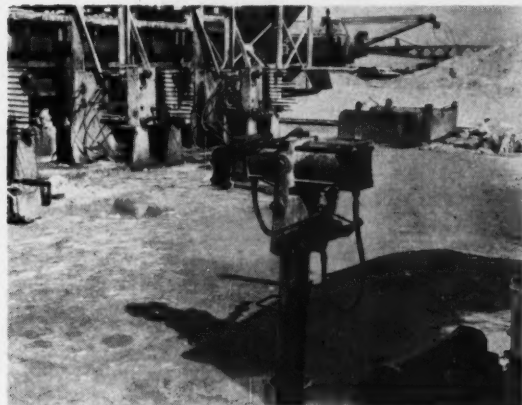
Steel formwork for the deck sections was specially designed and built by Gardner for this proj-



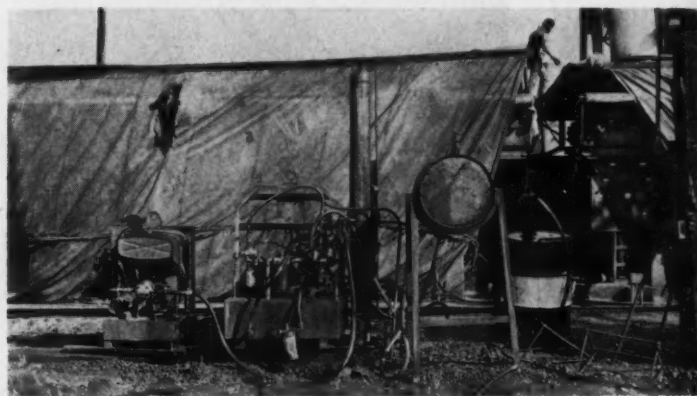
HYDRAULIC FORMS—Hydraulic cylinders powered by a central pump actuate form sections for sidewalks, median, and girders.



TENSIONING JACKS—Concrete pedestal holds hydraulic jacks for each girder. Jacks simultaneously pull at 28 strands in a girder.



PNEUMATIC PULLER—An air-operated jack pretensions strands to 2,300 lb. It fits outlets aligned with girders.



CONTROL SYSTEM—Gasoline engine powers hydraulic pump that supplies pressure to jacks and forms. Central board controls pressure.

Deck Sections

ect. The forms rest on concrete beam pads on the ground. Form sections for sidewalks, median, diaphragms, and girders are operated hydraulically and controlled by push buttons from a central board. These form sections are hinged and fold away from the deck during stripping so that the completed deck can be lifted off the pads.

The only form sections not operated hydraulically are steel bulkheads for the ends of the decks. During forming and stripping, an A-frame gantry handles the bulkheads. Forms for the bottoms of the girders are stationary.

The power-operated forms make it easy to prepare for a deck pour. The major task is placing prestress strands for the girders and reinforcing steel for the ties and the 8-in.-thick roadway slab. Each deck section requires about 5 tons of steel.

To speed this operation, Gardner preassembles the reinforcing bars on a steel pipe frame at a station in the casting yard. When the forms are ready, a gantry picks up the pre-tied steel and places it on the casting bed. Prestress strands are secured next, and ties are added last.

Each of the four girders is 4 ft 4 in. deep and contains 28 strands of 7/16 in. in dia. These are pretensioned in two stages. First, each strand is stressed individually to an initial load of 2,300 lb. Then, all 28 strands are stressed simultaneously to a load of 18,900 lb per strand.

Two different jacks take care of the pretensioning. An air-operated jack handles the initial stressing. This jack is mounted on a pipe stand that is connected to air outlets imbedded in the slab floor at the end of the casting bed. One air outlet is aligned with each girder.

After the initial stress, hydraulic jacks pretension the strands to the required final load. These jacks are built into the end of the casting bed and are operated by the same hydraulic system that powers the forms. It takes about 4 hr to complete the pretensioning for one pour. Each pour includes

continued on page 133

**'61 FORD <sup>TANDEM
AXLE</sup> TRUCKS**
BROADER WARRANTIES...
GREATER DURABILITY...
BIGGER CHOICE!



FORD DIVISION, *Ford Motor Company*,

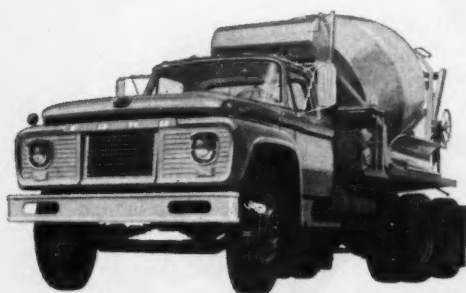
FORD HAS WARRANTED TO ITS DEALERS, WHO IN TURN WARRANT TO YOU:

- **New Super Duty V-8 Engines for 100,000 miles or 24 months!**
- **New Ford Trucks for 12,000 miles or 12 months!**

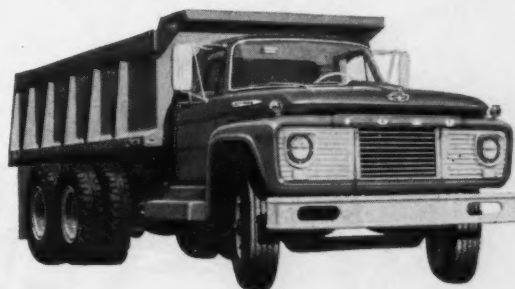
Ford's rigid quality control program gives you unsurpassed dependability! Positive evidence of uniformly high production and inspection standards is the exclusive new 100,000-mile engine warranty. On 401-, 477- and 534-cu. in. Super Duty V-8 engines, each major engine part (including block, heads, crankshaft, valves, pistons, rings), when engine is used in normal service, is warranted by your dealer against defects in material or workmanship for 100,000 miles or 24 months, whichever comes first. Warranty covers the full cost of replacement parts . . . full labor costs for the first year or

50,000 miles, sliding percentage scale thereafter.

In addition, an extended warranty covers all 1961 Ford Trucks of any size. Each part, except tires and tubes, is now warranted by your dealer against defects in material or workmanship for 12 months or 12,000 miles, whichever comes first. The warranty does not apply, of course, to normal maintenance service or to the replacement as normal maintenance of such items as filters, spark plugs and ignition points. *No other trucks give you such protection for your investment; never before could you be so confident of long-range durability!*



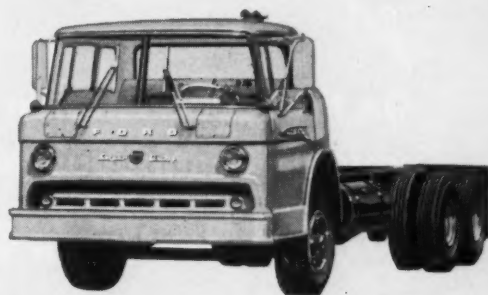
Tougher tandems offer greater strength in chassis, cab and sheet metal for longer life. Full-Torque fly-wheel power take-off is available for more efficient drive of transit mixers and heavy-duty equipment.



Timken or Eaton rear axles, with capacities up to 38,000 lb., are available in all Super Duty tandems. High capacity front axles have wider track for increased stability when cornering or in rough terrain.



GVW's up to 51,000 pounds permit big, profitable payloads. Heavier gauge metal and stress-isolating independent mounting for radiator, fenders and cab give you greater durability.



Tandem Axle models are available with tilt cabs. As with conventional tandems, aluminum walking beams, wheels and fuel tanks are offered to cut weight . . . increase payload capacity.

**QUALITY-BUILT...
MAINTENANCE-
ENGINEERED**

FORD TRUCKS COST LESS

Circle 131 on Reader Service Card



*In the Lipe
Spotlight...*



✓
**On the level . . . or on "bulldog" grades . . .
you get continuous, all-season service with**

LIPE TC CLUTCHES

In heavy equipment on all kinds of construction jobs, the Lipe TC Clutch delivers full torque capacity for the entire life of the friction material!

As friction disc facings wear through normal use, Lipe's exclusive toggle-lever linkage keeps efficiency high . . . maintaining torque capacity for maximum periods.

Both manufacturers and owners of heavy equipment are turning to the TC for this and other cost-reducing qualities:

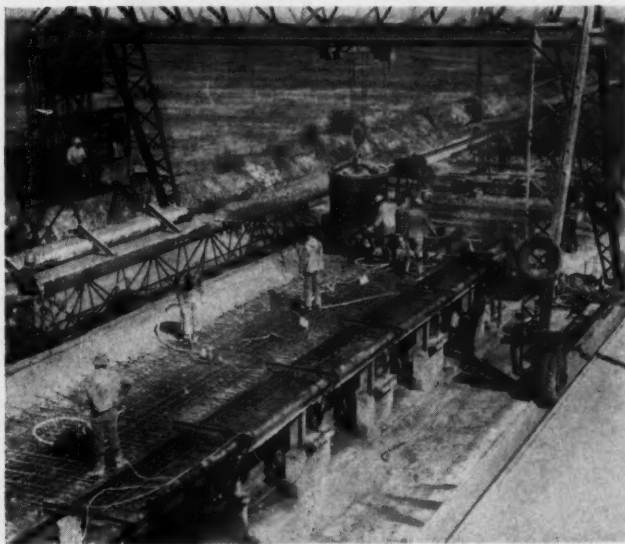
easier on driveline components . . . easier to maintain . . . less down time . . . lower over-all operating expense by mile, hour or year!

In any on- or off-highway heavy-duty service, make performance prove to you that



LIPE DELIVERS IN THE CLUTCH

© LIPE—ROLLWAY CORPORATION, SYRACUSE, NEW YORK



BIG FOUR—Crews pour 75 yd of concrete for each deck section. Air-operated 60-ft-long screed finishes entire deck in one pass.

two deck sections end to end. The prestress strands running the length of both sections are tensioned at the same time. After concrete is placed and cured, the strands connecting the two sections are cut apart.

Concrete is mixed in a Rex central-mix plant erected next to the casting bed. The mix is designed for 5,000 psi and a 2 to 3-in. slump. It contains seven sacks of high-early-strength cement and Protex dispersing agent.

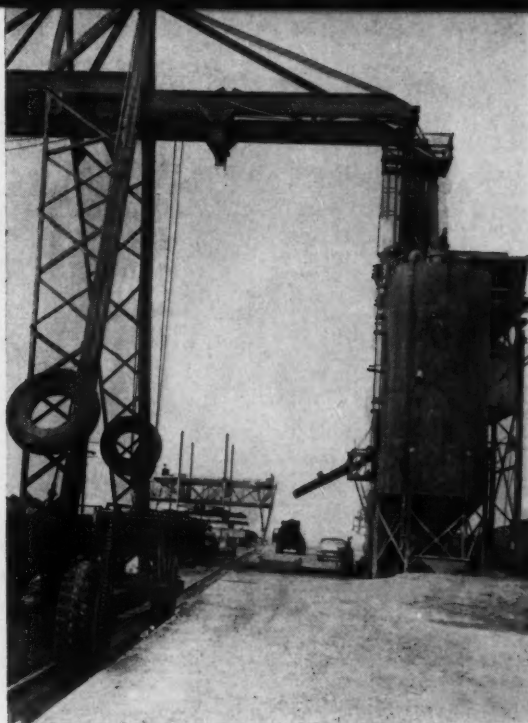
The mixer dumps 2-yd batches directly into a Blaw-Knox bucket on the A-frame gantry. It takes 5 to 6 hr to pour two deck sections. Each takes 75 yd of concrete. During concreting, Jackson vibrators consolidate the mix and a job-built screed strikes off the surface. The air-operated screed is 60 ft long to cover an entire deck section in one pass.

Completed decks are covered with burlap blankets, and as soon as the concrete has set the bulkheads are stripped from the ends of the decks. Then a 30x60-ft platform with tarpaulins is placed on top of the deck. The tarpaulins are draped over the sides of the forms to contain steam during curing.

When the concrete attains a strength of 4,000 psi, the strands are released and the two deck sections are cut apart. Under normal conditions it takes about 10 to 12 hr of steam curing to reach this strength. On hot days it may take as much as 24 hr.

Strands are released while the steam is still on, but it is regulated to provide a temperature drop of 1 deg per minute after tension is released. Then the frame with the tarpaulins is moved away, and a gantry takes the deck to a water curing station. To prevent uneven shrinkage and cracks, elapsed time between steam curing and water curing must not exceed 4 hr, according to the specs.

A section is water cured for 48 hr. The water curing station is big enough to hold two decks at the same time. It contains a piping system with



WATER CURING—Spray nozzles deliver water for 30 sec out of every 5 min. Decks are water cured at this station for 48 hr.

spray nozzles that cover the entire area under a deck section. The nozzles deliver a 30-sec water spray every 5 min.

After curing, deck sections are moved farther down the casting yard where they are inspected by the Texas State Highway Dept. Acceptable sections are finished by patching the cable ends with Duraweld. A few unacceptable sections have been broken into small pieces and trucked away for use as fill.

Handling Equipment

To move the heavy deck sections, Gardner built a large gantry with a lift capacity of 200 tons. The gantry spans the 50-ft-wide casting yard and rides on double rails along each side. Four hydraulically powered lift cylinders handle the loads.

When moving, the sections must be supported so there are no unevenly distributed loads that might crack the deck. To avoid eccentric forces on the deck, Gardner equipped the gantry with a large horizontal cylinder that runs the length of the deck section. The cylinder acts as a torsion bar and equalizes the loads applied at the four pick-up points.

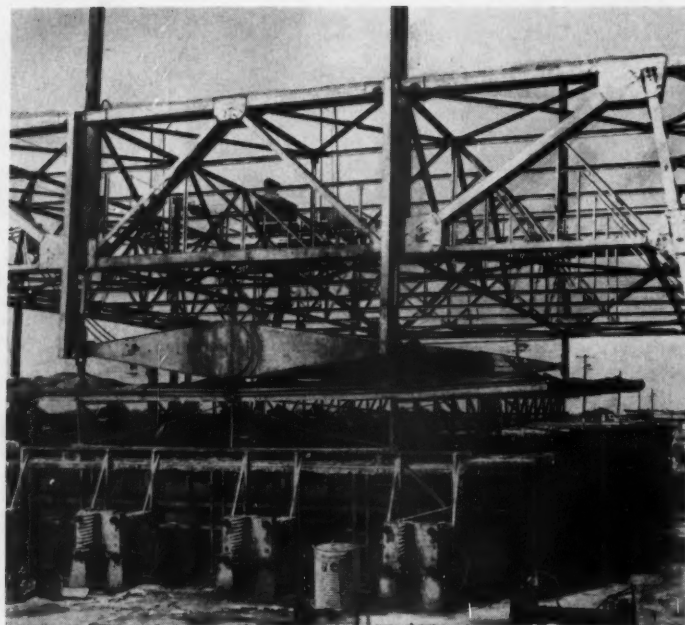
In addition to moving the decks, this gantry places the pre-tied reinforcing mats and the curing platform. Supplementing this rig is an A-frame gantry that handles materials, pours concrete, and places and strips the steel bulkheads.

The A-frame gantry also spans 50 ft, but it rides on rubber-tired wheels that run in trough-shaped tracks between the double rails of the other gantry. The cross beam above the A-frames supports double rails that carry the hoist. The rails extend beyond the tracks on the side where the concrete plant is located. This enables the concrete bucket to move beyond the casting bed so that concrete can be dumped directly from the mixer into the bucket.

continued on next page



FORM BULKHEADS—Crew strips form from end of deck and gantry moves it away.



PREPARATION FOR CURING—Gantry positions special platform with tarpaulins on top of deck. Steam is circulated under the platform and tarpaulins for curing.



MECHANIZED CURING—Deck sections are cured at this station for 48 hr. Nozzles deliver water spray for 30 sec out of every 5 min.

CASTING YARD . . . continued

The most unusual handling rig on this job is the floating crane that erects the deck sections. The "Seahorse" is a spectacular double-hammer-head unit with a capacity of 400 tons. It was designed and built especially for this job.

Deck sections are transported to the crane on a 40x50-ft barge. At the site, the crane takes over the section while a tug jockeys it into position. Then the Seahorse lowers the deck onto $\frac{3}{4}$ -in.-thick neoprene cushions to complete the operation. Every third bent has an expansion shoe.

In charge of operations for Elmer C. Gardner, Inc., is Marshall W. Boehning, superintendent. Project manager is E. A. Horstketter. The workforce on the \$4.2-million job numbers 125 men.

Handling the project for the Texas State Highway Dept. is Joe Mica, resident engineer. Senior district engineer is W. A. King.



SEAHORSE—Double-hammer-head crane with 400-ton capacity holds deck while tug positions it. Crane places two decks a day.

WORTHINGTON COMPRESSOR NEWS:



● INDICATES REGIONS WHERE
MONO-ROTOR IS ALREADY
FIELD-PROVEN

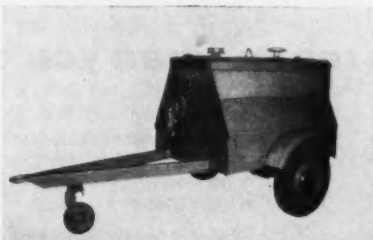
MONO-ROTOR PROVEN...WARRANTY QUADRUPLD

The new line of Worthington Mono-Rotor compressors has gained extensive field experience with outstanding success. Performance has been so successful, in fact, that Worthington has lengthened its warranty period from 3 months to one year. It is the first major construction industry compressor manufacturer to do so.

Mono-Rotor units have proven themselves in widespread areas over the last 3 years. They are in locations ranging from New York City to Hawaii—from Alaska

to Argentina. Service conditions have ranged from the intermittent use in winter and summer to three-shift use for months at a time.

What makes the Mono-Rotor compressor so dependable? It is extreme simplicity.



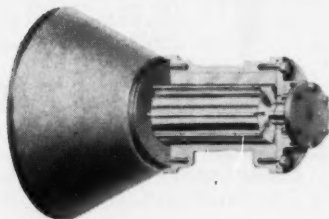
NEW 125' MONO-ROTOR BLUE BRUTE

It actually has 63% less parts than its two-stage predecessor. The Mono-Rotor has just one stage, one rotor, two bearings, no gears and no oil pump. No other compressor design is so simple.

The new Worthington Mono-Rotor compressors have other benefits, too. They
Circle 135 on Reader Service Card

are 20% lighter in weight and are designed for improved towing and tracking. The 3rd wheel is standard equipment for easier handling on the job. It runs all day on a tank of fuel. There's an engine-saving clutch and many other features.

The Mono-Rotor can now be ordered in the 85', 125' and 250' sizes. See it . . . rent it . . . or buy it at your Worthington dealer listed in the Yellow Pages under "compressors". Or write Worthington Corporation, Dept. 60-39, Holyoke, Mass. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.



**MONO-ROTOR: 1 STAGE... 1 ROTOR...
2 BEARINGS... NO GEARS... NO OIL PUMP**



PRODUCTS THAT WORK FOR YOUR PROFIT



USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

POWER...that's ready when you are

With Homelite Carryable Generators on the job, you'll always have a dependable source of power... that's ready when you are... to operate labor-saving tools, brilliant floodlights and other electrical equipment. You can choose from Homelite's famous-for-quality 2-cycle engine driven models. Or pick from Homelite's new line of economy-priced 4-cycle engine-driven generators (available for operation on gasoline or LP gas). There are 115 volt, 115/230 volt and high-cycle units. Sizes from 1500 watts to

5000 watts. Every one constructed for heavy-duty operation, light weight for easy carrying and featuring Homelite's exclusive TOOL-SAVER voltage control.

Write for details today. We're ready when you are to demonstrate any model Homelite generator on your job.

Illustration shows Homelite Model 42A115/230 generator. Capacity: Up to 5000 watts of 115 and 230 volt, 60 cycle AC power. Engine: 4-cycle Wisconsin



Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

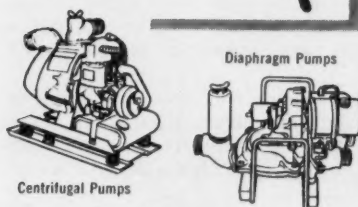
HOMELITE

CARRYABLE
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PUMPS • GENERATORS • BLOWERS

HOMELITE: A DIVISION OF TEXTRON INC.—1008 RIVERDALE AVE., PORT CHESTER, NEW YORK • IN CANADA • TERRY MACHINERY CO., LTD.

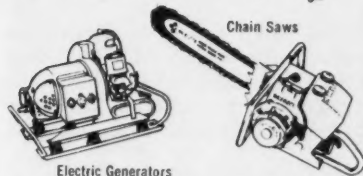
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HOMELITE Factory Branches throughout the country sell and service Homelite's complete line of carryable construction equipment.



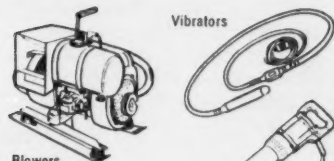
Diaphragm Pumps

Centrifugal Pumps



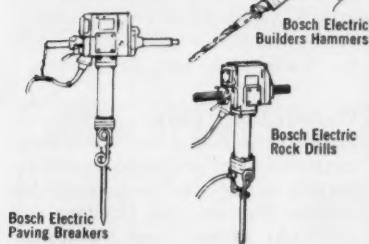
Chain Saws

Electric Generators



Vibrators

Blowers



Bosch Electric Builders Hammers

Bosch Electric Rock Drills

Bosch Electric Paving Breakers

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SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

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A DIVISION OF TETRON INC.

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TERRY MACHINERY CO. LTD.

Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distribution, sales personnel and other activities.

Distributor Appointments

Clark Equipment Co.: Arrow Equipment, Inc., has been named distributor of the Michigan line of construction equipment for North Dakota.

Bucyrus - Erie Co.: Northern Equipment Co., Enid, Okla., has been appointed distributor for the crane-excavator and Hydrocrane lines in western Oklahoma.

Koering Co.: The Buffalo-Springfield division has appointed Ruffridge-Johnson Equipment Co., Minneapolis, distributor for Minnesota.

Kwik-Mix Co.: Construction Supply and Rental Co., Southfield, Mich., will distribute the entire line for eastern Michigan. Gil Boers Equipment Co., Chicago, and Equipment Repair and Supply Co., Northlake, have been appointed distributors for Ka-Mo tools in north central Illinois and adjoining Indiana counties.

Yale & Towne: Western Road Machinery Co., Salt Lake City, has been appointed distributor for Utah, southern Idaho and four Wyoming counties. Bardale Equipment Co., St. Louis, is distributor for eastern Missouri and southern Illinois. Mingolla Machinery Co., Concord, has been named for New Hampshire.

General Electric: The Punt, Inc., Floral Park, N.Y., has been named a distributor of silicone insulating materials in lower New York State, northern New Jersey and western Connecticut.

On the Sales Front

Alpha Portland Cement Co.: Jay F. Simpson has been named director of sales.

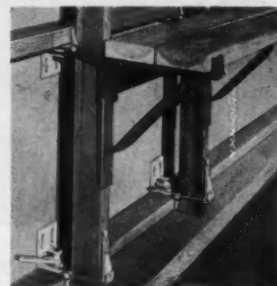
Ridge Tool Co.: Ron Ifould has been appointed sales representative for Western Europe.

continued on page 138

- ★ Rigid strength for heavy, high wall construction.
- ★ Versatile and economical for lighter projects.

WEDGE-LOCK

The steel dye-stamped bracket features strength, durability and light weight. Panels stack easily and there is no need to remove stiff-back to add ties or adjust brackets. Brackets are opened and closed with a carpenter's hammer... no special tools are required.



Scaffold brackets can be attached to any row of ties even after forms are removed.

See your local Gates dealer or write for complete details on all Gates Systems.

GATES & SONS, Inc.

80 S. Galapago • Denver 23, Colo.

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Dependability



See your distributor
or write direct for catalog and prices



The Sign of a GOOD Hose Clamp

PUNCH-LOK
Company

Dept. D, 321 North Justine Street, Chicago 7, Illinois
Circle 138 on Reader Service Card

SALES AND SERVICE . . .

continued

Yale & Towne: Jack Ironside is the new district sales representative in the Pacific Northwest for the Trojan tractor shovel line.

Worthington Corp.: Alfred H. Cercone has been named manager, parts service, marketing services group at Harrison, N.J.

Koehring Co.: The Koehring Div. has appointed Charles E. Petot as a representative to cover Kentucky, Ohio, Indiana, and Michigan.

Alloy Rods Co.: O. M. Taylor has joined the sales staff of the Hard Surfacing Div. and will cover the southeastern region of the country as a hard surfacing specialist.

R. G. LeTourneau, Inc.: Jim E. Raven, a specialist in the logging equipment field, has been appointed district representative in the northwest and will work in Washington, Idaho, Montana, and Alaska.

Owatonna Tool Co.: The Tools and Equipment Div. has named James L. Miller district manager for Oklahoma and Arkansas.

Worthington Corp.: Henry S. Brocksmit has joined the Construction Equipment Sales organization as distribution representative in Washington, Oregon, and northern Idaho, with headquarters in San Francisco.

Air Reduction Co., Inc., R. H. Merriman has been appointed district manager of the Philadelphia office of the Air Reduction Sales Co. Div.

Allis-Chalmers: The new manager of the Chattanooga district is Henry M. Brundage.

Clark Equipment Co.: Lloyd L. Otto has been appointed sales manager of Canadian Clark, Ltd.

FWD Wagner Inc.: William M. Dreier is the new vice president in charge of sales in Portland, Ore.

Industrial Machinery Co., Inc.: Ellis P. Maas has been named central district representative.

American Tractor Equipment: W. A. Daniel has been named sales manager of the Oakland firm.

CONSTRUCTION METHODS

Aeroquip Introduces New Low-Cost Reusable Fitting for High Pressure Hose Lines



How IRON MIKE Fitting Grips Hose

NIPPLE

Designed to fit into hose without cutting inner tube. Available in 10 end fitting styles.

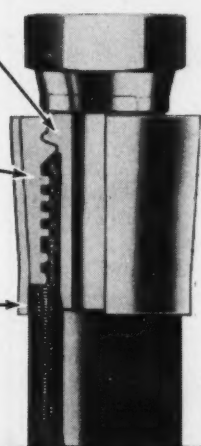
SEGMENTS

Grip hose reinforcement securely, mate with nipple assembly for correct positioning.

SOCKET

Forced over segments during assembly to form a rugged compression fitting that won't blow off.

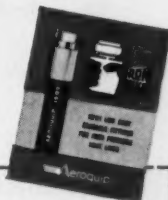
PATENT APPLIED FOR



Meet IRON MIKE, a rugged new hose fitting that provides all the field service advantages and replacement economy of reusable fittings—at rock-bottom prices. Hose assemblies made with IRON MIKE Reusable Fittings compare in cost with assemblies made with non-reusable fittings. Design is so simple that foolproof assemblies can be made by factory or service personnel in minutes.

IRON MIKE Fittings have been field tested for more than a year to assure traditional Aeroquip performance and dependability. Used with Aeroquip 1509 Multiple Wire Braid Hose, they are recommended for all industrial high pressure hydraulic applications up to 2250 psi. as well as pneumatic, fuel and lubrication systems. IRON MIKE Fittings are available in ten standard end styles for hose sizes from 3/4" to 2" I.D.

Mail coupon below for new Aeroquip Product Bulletin No. 651, or call your local distributor listed in the yellow pages.



Aeroquip

AEROQUIP CORPORATION, JACKSON, MICHIGAN
INDUSTRIAL DIVISION VAN DYKE, OHIO - WATERLOO DIVISION BUREAU, CALIFORNIA - AIR CORP. PASADENA, CALIFORNIA - AIR CORP. PASADENA, CALIFORNIA - AIR CORP. PASADENA, CALIFORNIA

Aeroquip Corporation, Jackson, Michigan

Please send me Bulletin No. 651 on new IRON MIKE Fittings and 1509 Hose.

Name

Title

Company

Address

City Zone State

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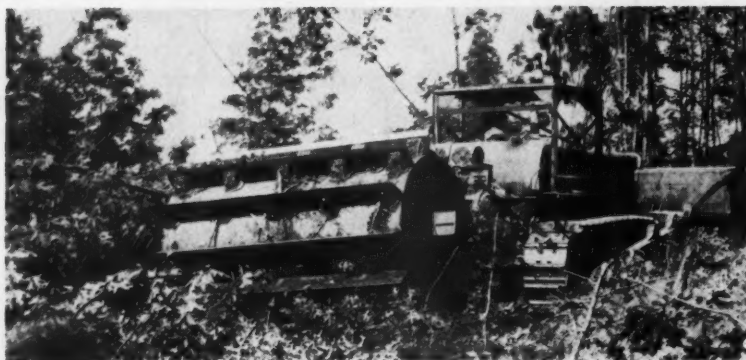
Construction Equipment News

For more information on any item, circle the key number, found at the end of each item, on the READER SERVICE CARD just inside the back cover.

Rolling Chopper Built For Heavy Duty

This rolling chopper, for tractors of 130 hp and more, can cut a 10 ft swath in 8-in.-dia vegetation. Weighing 25,000 lb with ballast, the SS1012 concentrates 200 lb on each inch of its twelve blades. Baffle plates prevent water from surging in partially filled drum. —Fleco Corp., Jacksonville, Fla.

Circle 301 on Reader Service Card



Versatility Is Featured in Crawler Excavator With Independent Drive

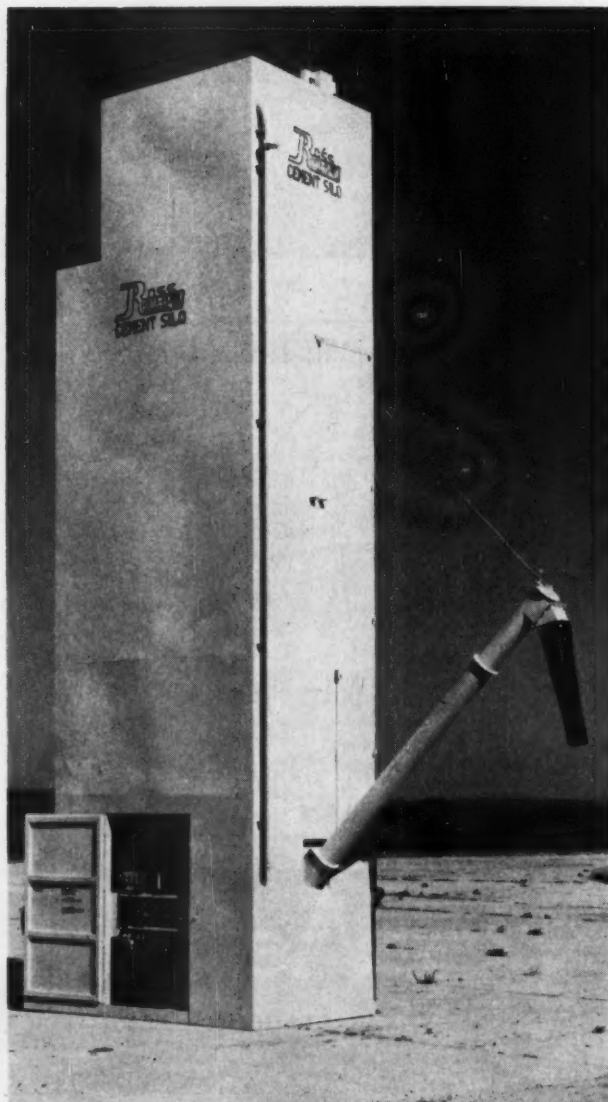
The model 315 crawler excavator, which converts from a backhoe to a crane, dragline, clamshell or shovel, has an independent drive system that permits the $\frac{3}{4}$ -yd machine to move up at the same time it is performing swing, dump and other operating functions. Boom length reaches 70 ft, with 25 ft jib for crane work. —Harnischfeger Corp., Milwaukee, Wis.

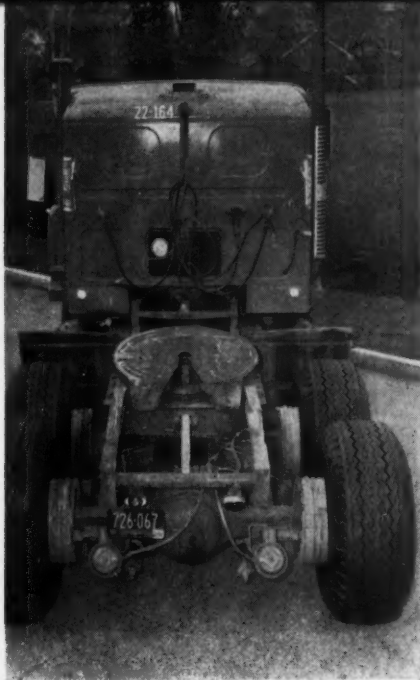
Circle 302 on Reader Service Card

Pneumatic Controls on Portable Cement Silo Eliminate Need For Vertical Elevator

A pneumatic intake system on Ross's new cement silo eliminates the need for a vertical elevator. Model 500 SP has air-controlled gates, a 52-cu-ft weigh batch bin, a 5,000-lb scales system, an air compressor and an aeration system. This portable model can be moved on the highway by one truck. One man and a crane set it up in 30 min. —Ross Porta-Plant, Brownwood, Tex.

Circle 303 on Reader Service Card

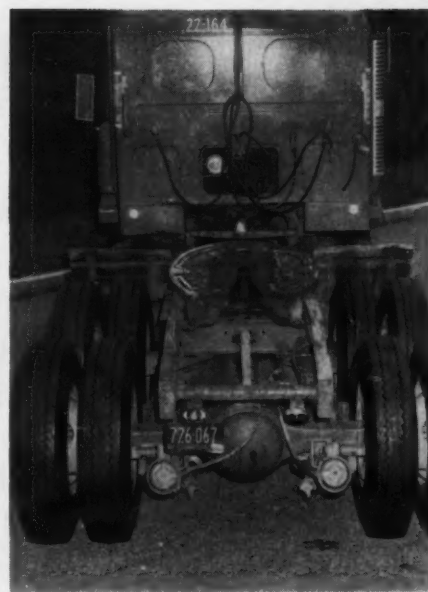




New Duplex Truck Tire Replaces Familiar Duals

Firestone's Duplex truck tire, shown at left, is intended to replace duals, right. The Duplex requires less maintenance than duals and weighs less, allowing more payload. Eleven sizes from 10-16.5 to 23-23.5 will be produced in three tread patterns for highway, off-highway and combined operations. The first model, the Duplex 18-19.5, weighs 300 lb in assembly and is designed to replace 452-lb, 10.00-20 duals. Firestone also makes the required rims and disks.—Firestone Tire Co., Akron, Ohio.

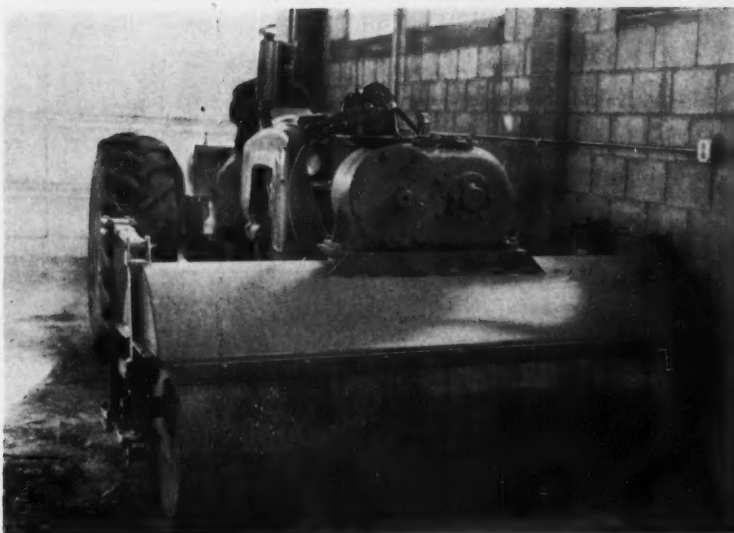
Circle 304 on Reader Service Card



Hydrostatic Feature Provides Versatility

A hydrostatic transmission enables this auger backfiller to travel on the road at 30 mph and to work at 2 mph. Controlled by a single valve, the transmission gives instant forward or reverse speeds with no power loss. Power is supplied to all wheels. Three-point suspension simplifies removal of the auger, which is 35 in. by 9 ft. The unit has power steering and hydraulic brakes.—Anchor Sales Corp, Celina, Ohio

Circle 305 on Reader Service Card



Wider Vibrating Roll Does Close Work

The rolling width is wider than the drive wheels on the Seaman VR-84 self-propelled vibratory impactor. The unit produces impacts up to 25,000 lb, in a range from 600 to 1,400 blows per min. The machine consists of a two-wheel, modified prime mover with the front carried on a steel roll. The 38x84-in. roll is spring mounted in a steel frame that confines vibrations to the roll. The impact mechanism is hydraulically powered.—Seaman Corp, Milwaukee, Wis.

Circle 306 on Reader Service Card

JOE IS PROUD OF HIS

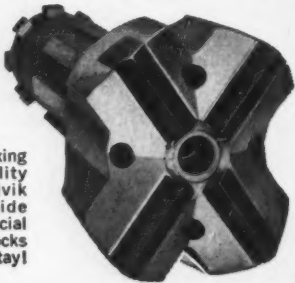
Good reason, too! He's got a 9-inch down-the-hole bit from Sandvik-Coromant, and that means he's got a bit that's better than he's ever used before!

Strong statement? Sure. But here's proof:


First, Sandvik is one of the world's largest and most experienced manufacturers of tungsten carbide. Therefore, Joe gets the highest quality carbide possible. From more effective refining, through better mixing, to more careful control of grain size—everything possible is done to assure Joe longer bit life and more feet between sharpenings.

More proof: Sandvik carbide inserts *stay in*, thanks to our unique brazing method. And since the entire bit is made from Swedish steel—Joe knows breakage won't be a problem.

You'll be happy with Sandvik-Coromant down-the-hole bits, too. They're available from 4¾ to 9 inches in diameter, and for all types of rigs. Get in touch with your nearest Atlas Copco office today, or write to Dept. CM-61-1.



Better refining, mixing and over-all quality control by Sandvik means best carbide possible. And a special brazing method locks the inserts in to stay!



Sandvik down-the-hole bit bodies are made from Swedish steel by Swedish craftsmen. Result: less breakage...longer life!

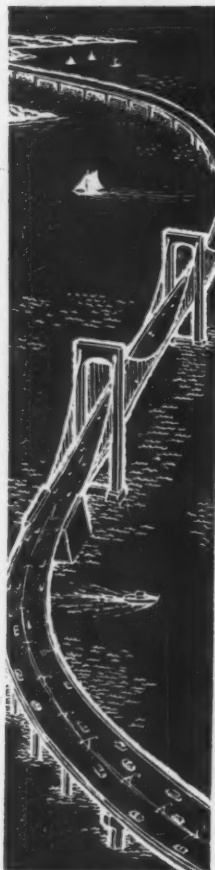
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Strut Tyscrus**
for piers & walls

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for decks
& ramps

**Screw
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**Continuous
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In bridge building, where time is money, concrete contractors have come to rely on Richmond to help them save both. All Richmond products are designed to save money by making any concreting job easier, faster and safer!

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Circle 144 on Reader Service Card

EQUIPMENT NEWS...

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.



Arc Welder Provides Current Range From 40 to 225 Amps

This ac transformer-type arc welder for general maintenance welding has a dial control to regulate current between 40 and 225 amps. Electrodes up to 3/16-in. dia can be used to weld materials of any thickness. The welder is designed for a 220-v single-phase power supply. Price of the welder (about \$158) includes welding cables, headshield, electrode holder, and ground clamp. Wheels are available as an optional accessory.—**The Lincoln Electric Co., Cleveland 17, Ohio.**

Circle 307 on Reader Service Card



Concrete Dump Body Unloads to Side

The Dumpcrete Side-Dump mounts on a standard truck chassis and can discharge a 12-ton (6 yd) load in 45 sec. Electric controls are located in the cab. The Side-Dump requires no outriggers and drives parallel to the forms with no backing or angling of the truck. Also available, special trailer-mounted units permitting one truck to deliver up to 12 yd.—**Maxon Construction Co., Inc., 2600 Far Hills Ave., Dayton 19, Ohio.**

Circle 308 on Reader Service Card

COMMENT from the BUTLER ENGINEER

This You'll Want to See

By the time you read this there'll be a Butler *Central Mix Plant* pouring a Niagara of concrete for a highway project near O'Hare Field in northern Illinois.

Project and Plant are big—big as hell. But the reason you'll want to see it for yourself is because of its production speed **AND MOBILITY**. Each section travels on its own wheels and it's engineered to dismantle, move and **RE-ERECT** in a hurry.

In other words, here's a King-Size *Central Mix Plant* with the portability of a highway batching plant... Just as the **BUTLER TX-4 Roadbuilders Plant** has set one world's record after another for production, this new *Central Mix Plant* will pour quality controlled concrete at record speeds.

Just how they've heard of it, we're not sure, but contractors from all over the country have called to say, "Let me know when it's operating. I want to see it."

And you will too!

Another thing: a plant of this size and potential production capacity speaks eloquently for a carefully considered confidence in a very bright and profitable business future.

We wrote some time ago about the *Blue River Tunnel*, 23.7 miles long—a great engineering feat. Now we learn that the Butler Plant used for lining the tunnel has been working continuously 24 hours a day, 7 days a week with no downtime for maintenance.

Everybody's happy about it, including

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

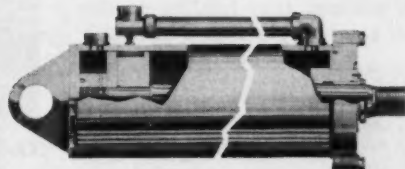
Circle 250 on Reader Service Card

"TROJAN 404"* muscle by Ward Hydronics cylinders

Outstanding muscle and stamina are engineered into the business end of Yale and Towne's Trojan Tractor Shovel Model 404 at very low cost. It's done by using two standardized heavy-duty, double-ended, double-acting Ward Hydronics** cylinders to position and actuate the shovel bucket; two single-packed double-acting Ward cylinders to lift the arms. Outstanding for low maintenance, for freedom from twist or impact breakage, say operators. For engineering details, for quotations, write to Ward Hydronics Inc., Alden, New York.



*Trade name, Trojan Division, The Yale and Towne Manufacturing Company
**Trade name, Ward Hydronics Inc.



Two Ward Hydronics 9-inch diameter, 36-inch stroke cylinders lift 12-ton payloads with ease

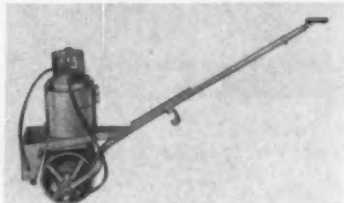


EQUIPMENT NEWS ...

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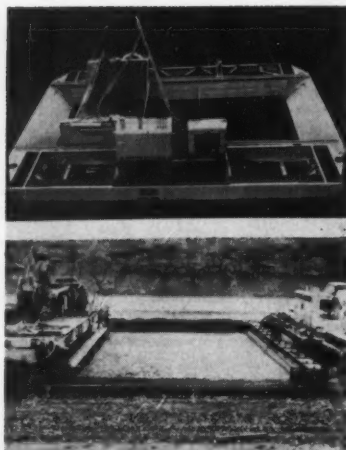
Heated Roller Joins Line

Douglas has added the Hotroll, a 335-lb heated asphalt roller, to its Western line of small rollers. Features of the Hotroll include compaction equal to a 5-ton tandem, easy hauling on the tail gate of a truck, four-torch



pre-heater to make cold patching easier, and a gas intake design that eliminates any possible overheating of the axle bearings.—Douglas Motors Corp., 1234 N. 62nd St., Milwaukee, Wis.

Circle 309 on Reader Service Card



Strike-Off Improvements In New Concrete Spreader

Maxon's new model of the Dump-concrete concrete spreader will spread and strike off a 6-yd load of concrete in 30 sec. The strike-off on the spreader has also been relocated for better visibility for the operator. Operator control of strike-off elevation has been improved by two innovations: a visual gage system provides 3-to-1 movement of the strike-off height indicator; and two hydrau-

lic cylinders providing vertical movement of the strike-off are larger in diameter. An extrusion or drag plate has been added to the vertical strikeoff blade. The spreader comes in two sizes that are adjustable between 11 and 16 ft or 20 and 25 ft.—Maxon Construction Co., Inc., Dayton, Ohio.





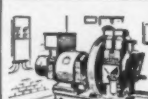



Circle 310 on Reader Service Card



Width Added to Spreading Machine

The spreading width of the Model 605 Power-Pack shoulder spreading machine has been increased to 6 ft. The truck-drawn unit has an adjustable strike-off blade. Standard models have 12.5-hp gas engines, electric starter, and 12-v battery.—Power-Pack Conveyor Co., Cleveland, Ohio.

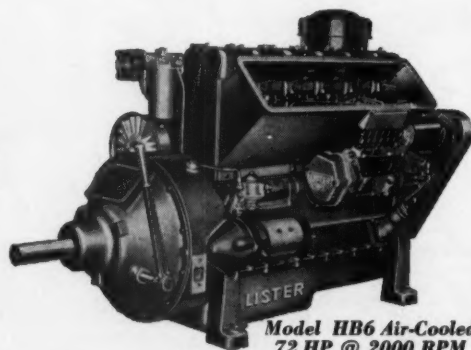
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	<p>Write for data and prices</p> <p>LISTER-BLACKSTONE, Inc.</p> <p>42-32 21st Street, Long Island City 1, N. Y.</p> <p>Tel.: STillwell 6-8202</p>	
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LISTER DIESEL ENGINES

Air-Cooled 3½ — 72 HP
Water-Cooled to 90 HP






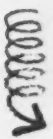


- Engineered to suit all types of applications
- Economical operation with low fuel consumption
- Dependable power for generating sets, pumps, compressors, etc., in construction, oil fields, agriculture, mining, refrigeration, etc.



Model HB6 Air-Cooled
72 HP @ 2000 RPM

◀ Circle 145 on Reader Service Card

Circle 146 on Reader Service Card
CONSTRUCTION METHODS

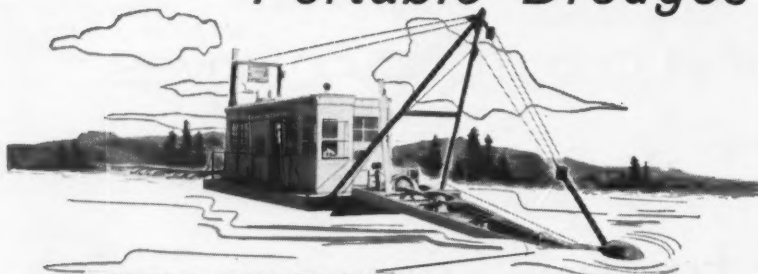
If it rolls on an axle  or turns in a
 bearing  or rides on a shaft 
 if it slides in a groove  or moves
 on a pivot  if it bores  or
 cuts  or transmits pressure 
 one of Sinclair's 500
specialized lubricants is
 designed to make it work better.



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OWNERS REPORT

On Ellicott Dragon® Model Portable Dredges



California Irrigation District Manager

O. E. Simmons, Palo Verde Irrigation Dist., Blythe, Cal., says, "All checks indicate the dredge is exceeding the specified capacity. Our operators frequently comment on the simplicity of operation and the small amount of effort required to handle the control system."

Georgia Dredging Company Official

James G. Hardee, III, Chatham Dredging Co., Savannah, Ga., reports, "We are well pleased with the operation of our DRAGON's all-hydraulic system. It is excellent. It has insured very economical ease of operation."

Ohio Municipal Water Department Director

W. T. Eiffert, Dayton, Ohio, writes, "We have never received such a complete piece of equipment, nor have we ever received such complete training in the operation of a new piece of equipment."

Florida Real Estate Developer

Leonard Mulbry, "Venezia," New Smyrna Beach, Fla., states, "We have been more than satisfied with the production and operation of our Ellicott DRAGON. It is well engineered, accurately constructed and economical to operate. We have determined the value of obtaining a completely engineered dredging unit from a reputable manufacturer rather than building one ourselves or obtaining one from a less well-established firm."

Other satisfied users of Ellicott DRAGONS have made similar statements, all of which testify to the DRAGONS' top-flight design, quality Ellicott components and proved performance. When you are considering the purchase of a dredge to excavate underwater earth materials, we will be glad to furnish the technical details on the correct DRAGON for your project.

A comprehensive brochure describing the complete line of standardized DRAGON model dredges and their wide variety of applications has been prepared for you. Simply fill in the handy coupon and your copy of Bulletin 980 will be mailed promptly.

ELLICOTT MACHINE CORPORATION, Baltimore 30, Maryland, U.S.A.; Ellicott-Brandt, Inc., Baltimore, Maryland; Ellicott Fabricators, Inc., Baltimore, Maryland; McConway & Torley Corp., Pittsburgh, Pennsylvania; Timberland-Ellicott, Limited, Woodstock, Ontario, Canada; Dragues Ellicott France, Paris, France; Dragas Ellicott do Brasil Ltda., Rio de Janeiro, Brazil; Ellicott de Mexico, Mexico City, Mexico.

Successors to the floating dredge business of the Bucyrus-Erie Company and the American Steel Dredge Co. Complete engineering, design and construction service.



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Send me a copy of Bulletin 980, describing the complete line of DRAGON model dredges.

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2002

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EQUIPMENT NEWS...

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.



Space Heater Has Wheels for Mobility

This portable space heater can be moved on its wheels for work around walls, floors and scaffolds, indoors and out, in warm or cold weather. Kelley's Hot Shot heater has atomizing equipment that permits the use of low-cost fuels. The machine has thermostatic control and an automatic cut-off switch. — Kelley Machine Div., Wiesner-Rapp Co., Buffalo, N.Y.

Circle 312 on Reader Service Card



Horizontal Drill Bores Yard-Wide Holes

This gasoline-powered horizontal boring unit can drill 36-in.-dia holes. The Ka-Mo G-160 has a 52-hp air-cooled gas engine with hook rollers and engine base. Also featured: a three-speed transmission and gear reduction with clutch, 9 gpm hydraulic pump powering the feed mechanism, levelling gougtriggers, track and connecting plates. Ratings for the unit range from 150 ft of 36-in.-dia hole to 200 ft of 12-in.-dia. — Kwik-Mix Co., Port Washington, Wis.

Circle 313 on Reader Service Card

Circle 149 on Reader Service Card ➤

CONSTRUCTION METHODS

**55% LESS
KICK TO
THE
OPERATOR
— BUT 100%
POWER
AT THE
BIT!**



Le Roi Shock-Absorbing Sinker Drills

If you want to see a startling increase in drilling footage, equip your drillers with Le Roi shock-absorbing sinker drills!

Le Roi's rubber-cushioned torsion handle absorbs 55% of the bone-racking, brain-rattling shock doled out by ordinary drills. The result: Drilling output soars because workers can concentrate on operating the drill — *not fighting it!*

There's more. Exhaust is directed *away* from the operator. Swivel-type air connections ease maneuvering — and latch-type retainers simplify tool changes. Lap-finished mating surfaces and positive oiling improve tool efficiency and extend service life.

Let your drillers try them. Call your Le Roi distributor — or write to Le Roi Division, Westinghouse Air Brake Co., Sidney, Ohio.

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AIR TOOLS**



AT-54

The voice of 18 years' experience says—

"THIS CEDARRAPIDS G40A IS THE



Cedarapids

Built by
IOWA

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa

IOWA MANUFACTURING COMPANY, Cedar Rapids, Iowa

Gentlemen: Please send the literature checked

- | | |
|--|--|
| <input type="checkbox"/> Bulletin AP-26 (Portable G-Unit Plants) | <input type="checkbox"/> Bituminous Pavers |
| <input type="checkbox"/> Bulletin AP-27 (Stack-Up H-Unit Plants) | <input type="checkbox"/> Aggregate Plants |

Name _____

Company _____

Address _____

City _____ State _____

Send for these bulletins

Whether you need portable plants for jobs-on-the-move, or stationary plants for localized markets, these two bulletins contain valuable information about all Cedarapids batch-type models, including production-balanced accessory equipment.



Circle 150 on Reader Service Card

BEST PLANT ON THE MARKET"

The voice is LYLE HARMON, Vice President
KINGSPORT ASPHALT CORP.
Kingsport, Tennessee

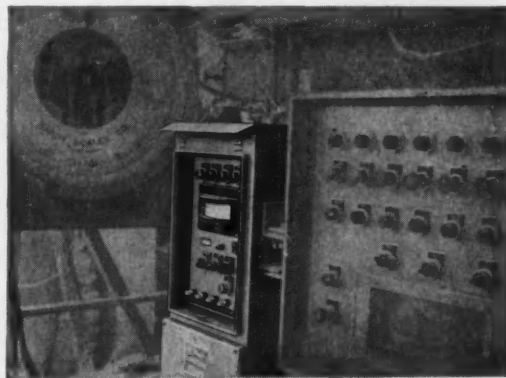
After 18 years in the bituminous mixing and paving business, the vice president of Kingsport Asphalt Corp. is well qualified to judge the comparative performance of asphalt plants. When Mr. Harmon calls his Cedarapids G40A "the best plant on the market" he knows what he's talking about. Mr. Harmon adds, "We find no bottlenecks with Cedarapids equipment. All components such as drier and dust collector are proportioned just right." On the job shown at the left, Kingsport's plant is mixing surface type 104 and binder to meet strict Tennessee state specifications and is producing an average 200 tons per hour.

For "best plant" performance, it will pay you to investigate the advantages of Cedarapids Bituminous Mixing Plants. They're

packed with profit-benefits that reduce your cost per ton. Among these benefits are all-automatic controls, including new automatic burner controls, on the G-Unit and H-Unit models to speed operations and give you two or three extra batches per hour; a long, wide pugmill mixer with a spiral paddle pattern that assures faster mixing and handles larger batches; Cedarapids-Quality construction throughout to cut maintenance cost; and a complete line to meet every capacity requirement from 1500-lb. to 7500-lb. batches. Three G-Unit models are 100% portable and self-erecting. Six H-Unit sizes are stack-up models for stationary installation. Three sizes of continuous mix plants are also available.

Kingsport benefits with new automatic drier control system

To meet strict specifications, Kingsport insists on positive quality control through every production step. One of the most important control centers is the automatic drier control system which regulates burner firing to meet varying drying conditions and assures close temperature control of dried aggregate. And you save money and headaches! You get up to 10% fuel savings, eliminate possible human error, eliminate load rejections due to low temperature, and your burner man is free for other productive jobs.



Add a Cedarapids Paver for a high-profit "paving package"

For profitably laying the mix produced by your Cedarapids asphalt plant, use the machine that revolutionized the concept of bituminous paving. The Cedarapids Paver's unique design applies the principle of high frequency screed vibration to insure high speed laying of smooth, densely compacted mat free from voids or surface tears. Elimination of the old fashioned tamper bar reduces the number of moving parts to reduce maintenance requirements. High frequency vibration is only one of the many exclusive features which have led so many asphalt plant owners to complete their Paving Package with a Cedarapids Paver.





NEW Improved Design for **FASTER, EASIER, SAFER** **MORTAR HANDLING** ... on the ground or up on scaffolding **HOD BUGGY**

CONTRACTOR APPROVED for Features and Advantages!

- Narrower, Deeper, Longer Tank Design reduces spillage ... takes up less room on scaffolds, makes handling safer ... allows two Hod Buggies to be picked up and carried at one time on standard Lull pallet forks.
- Greater Underclearance for easier fork pick-up from either side.
- Sloped End Tank Design for quicker, more complete cleanout.
- Large Load Capacity ... carries approximately a 7 cubic foot load of mortar.
- Large, Easy Rolling Wheels equipped with 10 x 2.75 zero pressure tires, hard rubber or steel tires ... full swivelling rear wheels, non-swivelling front wheels.
- Safer Double Brake System ... spring steel hand parking brakes on non-swivelling front wheels ... new kick-lock on left rear full swivelling wheel prevents moving off scaffolds.
- Full Width Handles for steering or lifting at both ends of Hod Buggy.
- Heavy Gauge Electrically Welded Steel Construction Throughout with stronger bracing made as part of non-swivelling wheels.

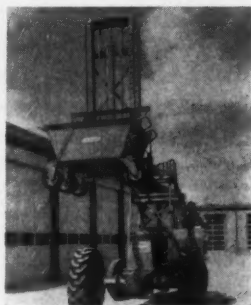
Write or ask your dealer today!

Dealerships Available!



Engineering Company, Inc.

Dept. HM • 3045 Highway 13 • St. Paul 11, Minn.



Narrower, longer and deeper ... two Hod Buggies can now be easily picked up and lifted to high scaffolds on a Lull High-Lift Loader equipped with standard pallet forks.

Circle 151 on Reader Service Card



WELD or have emergency power RIGHT ON THE JOB when you need it most—

Repair or do welded construction and save hundreds of dollars that mean extra profits on every job. Have your own power for running tools, lights, motors, etc., independent of regular power lines. HOBART BROS. CO., Box 681, TROY, OHIO, Ph. FE-2-1223.

"Manufacturers of the world's most complete line of arc welding equipment."

HOBART BROTHERS COMPANY, BOX 681, TROY, OHIO

Yes, I'd like to know more about the Hobart Power/Weld; also information on _____

Name _____

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City _____ Zone _____ State _____

200 amp.
DC welder
with 5 kw
AC auxiliary
power
100% duty
cycle



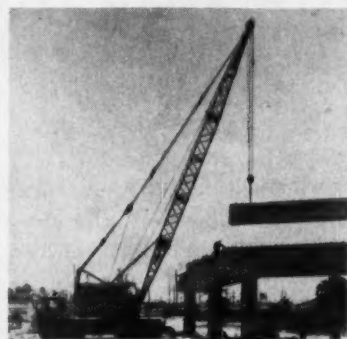
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details...
no obli-
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EQUIPMENT NEWS ...

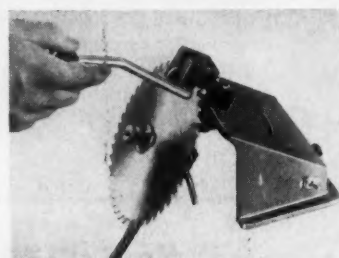
For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.



Clutches Featured On Truck Crane

Northwest's new 45-ton truck crane has uniform pressure-swing clutches with feather-touch control of main drum clutches. Also featured are a hook roller assembly mounted on an equalizer trunnion; removable, internal and external counterweights; low overhead clearance, and either flange or pin connected alloy booms. Optional equipment includes torque converter, gear-driven power load lowering, large capacity third drum with a line pull comparable to main drums, and remote control for the carrier. Gasoline or diesel engines are available for both carrier and rotating machinery.—Northwest Engineering Co., Chicago, Ill.

Circle 314 on Reader Service Card



Saw Sharpener Features Tooth-Setter Attachment

The EZ-Sharp portable saw sharpener has a cam-operated tooth-setter that attaches to the sharpener base with one cap screw and will handle circular saw blades from 4 to 24 in. in diameter. Blades can be set to any desired degree. Special grit wheels are available. — Easy-sharp Corp., Grand Rapids, Mich.

Circle 315 on Reader Service Card



BLAW-KNOX STEEL FORMS SHAPE GLEN CANYON DAM

re-used up to 100 times

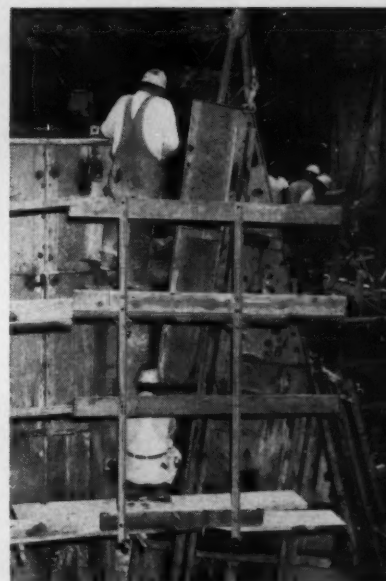
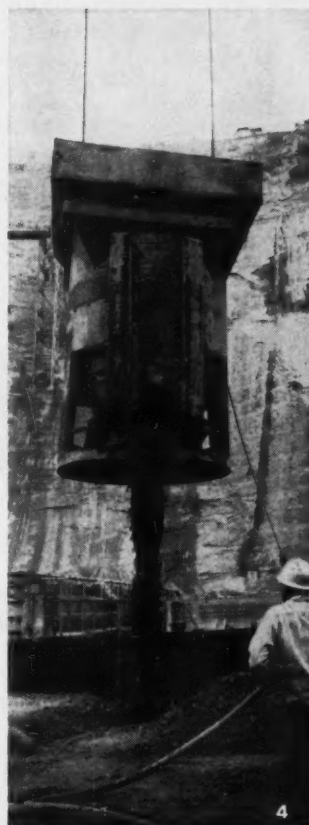
The \$108 million Glen Canyon Dam, being constructed by Merritt-Chapman and Scott Corporation of New York, uses Blaw-Knox heavy steel forms to shape the 5 million cu. yds. of concrete being poured. In addition, 225,000 cu. yds. will be required for the power plant; 150,000 cu. yds. already have been poured, using Blaw-Knox forms, for the diversion and spillway tunnels.

Specially designed, steel, cantilever forms are used on this third-largest dam in the country. They will be re-used up to 100 times and thus become a major cost-reducing factor.

Concrete is poured in 7½-ft. lifts, many measuring 70 by 170 feet, and one lift of this size can be poured in eight hours using Blaw-Knox 12 cu. yd., hydraulically operated concrete buckets.

The forms are stripped and raised in as little as four hours, and nearly 2 miles of these will be used.

Wherever the big jobs are, you will find Blaw-Knox heavy steel forms being used to give the shape of things to come. Call Blaw-Knox steel forms consultation service early in your planning for important engineering help. Blaw-Knox Company, Pittsburgh 38, Pa., phone Sterling 1-2700.



1. This panoramic view shows the many Blaw-Knox steel forms being used during concrete placement on the upstream and downstream faces of the dam and the powerhouse foundation.

2. This view of the downstream face of the dam shows how Blaw-Knox steel forms are used in 7½-foot lifts.

3. Final bolts are tightened on a 70-foot form section on the upstream face of a lift while other workmen prepare to raise the key form on the transverse construction joint side. 1½-inch diameter bolts are removed from anchors after concrete has set. Forms then are stripped and raised into position for the next lift.

4. Four special, self-powered, hydraulically operated Blaw-Knox concrete buckets of 12 cu. yds. capacity are used to pour the concrete. Each bucket has a roller gate opening 4 feet by 4 feet and can be stopped in any position. Permits dribbling of concrete. These are the largest buckets in the world of this type. Concrete is moved from a 20-story high batch plant via cableway.

BLAW-KNOX Steel Forms



Blaw-Knox designs and manufactures for America's growth industries: METALS: Rolling Mills • Steel Processing Lines • Rolls • Castings • Open Hearth Specialties • PROCESSING: Process Design, Engineering and Plant Construction Services • Process Equipment and Pressure Piping • CONSTRUCTION: Concrete and Bituminous Paving Machines • Concrete Batching Plants and Forms • Gratings • AEROSPACE: Fixed and Steerable Antennas • Radio Telescopes • Towers and Special Structures • POWER: Power Plant Specialties and Valves

Circle 153 on Reader Service Card

How to Save At Least One Cent Per Cubic Yard On Your Excavation Costs

Excavation is generally the biggest single pay item of a highway or street job, and it gets—and deserves!—a lot of your attention.

If a method, or machine, is found that will cut excavation costs by even one cent per cubic yard, you will usually buy it—it means important savings to you!

But there is another part of your work which gets little attention (it isn't spectacular, and it isn't a separate pay item) where even bigger savings are not only possible, but easily attainable—and that is in finish grading.

Look at it this way—on the average highway job there is a square yard of finish grading for every cubic yard of excavation.

Check your last few jobs and see for yourself! So it follows that a penny per square yard saved on finish grading is exactly the same as a penny per cubic yard saved on excavation.

The Preco Automatic Blade Control, installed on one or more of your graders, can save you 1¢—2¢—or even 3¢ per square yard on grading costs—you can prove this, on your own job. It is an irrefutable fact.

Call your Preco dealer, or Caterpillar Tractor Co. and LeTourneau - Westinghouse Co. dealers and a representative will visit your job and show you how. Call today—because every day *without* this method is costing you money.

(Advertisement)

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EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.



Graphite Lubricant For Heavy Equipment

A new graphite lubricant, applied with a brush from the can, dries to a hard finish on metal or wood in 30 min. Dri-Slick is intended for use on heavy construction machinery such as conveyors, chains, wire rope, cranes and large open gears. No mixing or thinning is required.—G. W. Smith & Sons, Inc., Dayton, Ohio.

Circle 316 on Reader Service Card



Portable Steam Cleaner Can Be Towed By Car

The Red-All Model 300 delivers high pressure saturated steam solution in 70 sec. The cleaner is completely automatic at the flip of a switch. The pressure is adjustable from 60 to 100 lb. It uses kerosene or No. 1 or No. 2 fuel oils. The unit is mounted on a track axle with ball trailer hitch, leveling stand, and wheels and tires furnished as standard equipment. Price: \$429.—Electronics, Inc., P. O. Box 150, Vermillion, S.D.

Circle 317 on Reader Service Card

CASTINGS?

That's all we make!

And on hand for immediate delivery are thousands of standard designs such as —



What's more, we have

15,000

patterns from which construction castings can be produced fast.

Our 168 page catalog of Gray and Ductile Iron castings will be sent promptly upon request.

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Circle 252 on Reader Service Card
CONSTRUCTION METHODS

GMC V DIESEL



You get rugged, compact
more inside cab room
short BBC dimensions
carry bonus payload
smoother power

EXCLUSIVE ECONOMY RANGE GOVERNOR



Only
have
range
positi
engin
most
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longe
Stand
on 4-

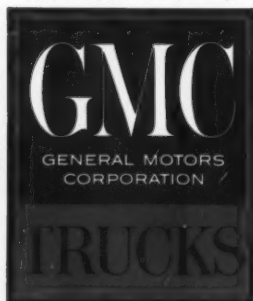
- Greatest combustion efficiency with maximum performance than naturally aspirated engines
- S exclusive automatic hydraulic fan
- Four exhaust complete exhaust scavenging, give a cooler-run
- Replaceable dry-type



THE TRUCK TRIUMPHS OF THE 60's!

GMC Truck & Coach—a General Motors Division—Pontiac, Michigan

From ½-ton to 60-ton
General Motors leads the way!



← **218 hp. V-6 Diesel Engine**
Out In The Open with
Other features of GMC
are: 72" BBC and 52" fr
tion for big loads; bigge
you can get; sharper tu
job-matched diesel powe
lbs. GVW to 76,800 lbs. C

GMC's Biggest, Die
60-ton Tractor—DBV
with 90" BBC and 28-in
location for biggest lega
ventional Ninety-Inche
diesels, are ideally suite
struction jobs from 30,0

V-6 LS

SHORTEST, LIGHTEST AND LEAST EXPENSIVE TO OWN—IN THEIR CLASS!

compact construction . . . many inches shorter for
room, simpler servicing and full advantage of
—lightest weight, up to 530 pounds less, to
loads—two-cycle design for faster acceleration,
power, exceptional fuel economy and added life.

Only GMC diesels
have this economy
range governor that
positively regulates
engine speed at the
most efficient rpm for
top fuel economy and
longer engine life.
Standard equipment
on 4-wheelers.

**BIG PULLING POWER!
HIGH PERFORMANCE!
6V-71 GMC TRUCK DIESELS**

MAX. TORQUE
604 @ 1200

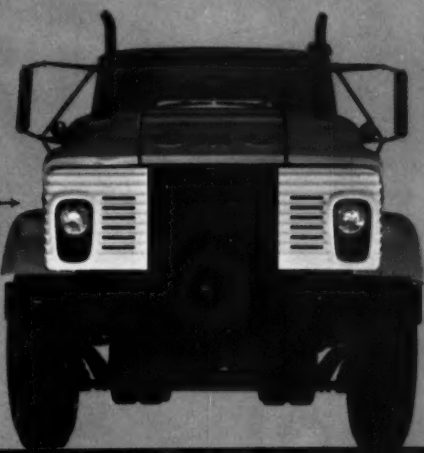
MAX. HORSEPOWER
197 @ 1800
to
218 @ 2100

Ratings are at sea level and 60°F.

num air intake from Roots-type blower ● Better high-altitude
● Save up to 5% on fuel, get up to 12 extra horsepower with
exhaust valves for each cylinder (not just 1 or 2) assure more
-running engine, lengthen valve life and provide more com-
pe cylinder liners are leak-proof, quick and easy to service.

Engine Is Right
with the cab tilted.
GMC steel tilt-cabs
2" front axle loca-
ggest safety vision
er turning angles;
power from 32,000
lbs. GCW.

Diesel-Powered
DBW9000 Series
28-inch front axle
legal loads. Con-
chers, with V-6
suited to all con-
30,000 lbs. GVW.



POWER REASONS

WHY GMCs ARE THE
MOST ADVANCED
CONSTRUCTION
TRUCKS IN 20 YEARS



EXCLUSIVE GMC ENGINES ARE BUILT TO



Short, Stout Design! Low-Rpm Power! GMC V-6s have exclusive long-life strength. Deep-skirted block has extra-reinforcing ribs and structural superiority throughout. Full-power at low engine speed and shortest stroke of any comparable truck-built engines reduce power-robbing wear, add to greater fuel economy and provide the desired, higher performance.

Cooler-Running, Stronger, Bigger Valves... Everything For Longer Life!

1 Extra-long valve guides, integral with head, minimize stem exposure to burning gases and assure faster transfer of heat. **2** Positive rotation of both intake and exhaust valves (except 305A) give valves self-cleaning action to prevent sticking, pitting, warping, leaking and burning.

3 Valve stems are short and big diameter to practically eliminate distortion. Sodium-filled exhaust valves* more rapidly transmit damaging heat through the valve guides to the coolant. **4** Up to 176 gallons of coolant circulating every minute (over twice as much as many competitive engines) provide the flow necessary for life-prolonging heat transfer. **5** Hard, tough, special steel is used in the exhaust valve seat inserts of heavy-duty V-6 engines to withstand high temperatures and constant seating action. **6** Valve heads and ports are extremely large for better breathing. Special hard facing resists pitting, corrosion, fatigue and wear. **7** Wide bridge between valves provides added strength and big cooling areas for better heat dissipation. *(Except 305s)

HERE'S YOUR COMPLETE CHOICE OF EXCLUSIVE GMC V-6 GAS ENGINES

MODEL	GROSS TORQUE RANGE	MAX. HP.
305A	258-260 @ 1400-2200	150 @ 3600
305B	264-266 @ 1100-2000	150 @ 3600
305C & D	268-270 @ 1200-2100	165 @ 3800
351	308-312 @ 1400-2400	180 @ 3400
401	375-377 @ 1200-2000	210 @ 3400



Lower Maintenance Costs! Adjustments, repairs and replacements are easier and less costly with GMC engines. For example—spark plugs are conveniently located inside the V. Self-locking screws make valve lash adjustments a simple job. Most major parts are interchangeable between V-6 engine models, and several with Twin-Six engines. Expert service and all parts are readily available at GMC Truck Dealers located across the country.



Low Buying Cost! Low Owning Cost! That's the new GMC 105" BBC Conventional 6-wheelers with 105" BBC cab, 351 or 401 V-6s. Servicing is convenient with wide hood and roomy engine compartment. Easy-in-and-out conventional cab trucks start with choice of 34 pickup combinations and go up to 60,000 lbs. GCW tractors.



Out-Earns, Out-Pulls All Trucks In Its Class . . . GMC steel tilt-cabs with exclusive 275 hp. Twin-Six. These easy-to-service, easy-to-drive models with 72" BBC and 52" front axle placement are also available with GMC V-6 engines. Full line, 19,500 lbs. GVW to 76,800 lbs. GCW, cannot be surpassed on any construction haul.

FOR ALL THE PROFIT-FACTS, CONTACT YOUR GMC DEALER LISTED IN THE YELLOW PAGES OR VISIT AN

OUT-LAST, OUT-POWER OTHER GAS ENGINES!

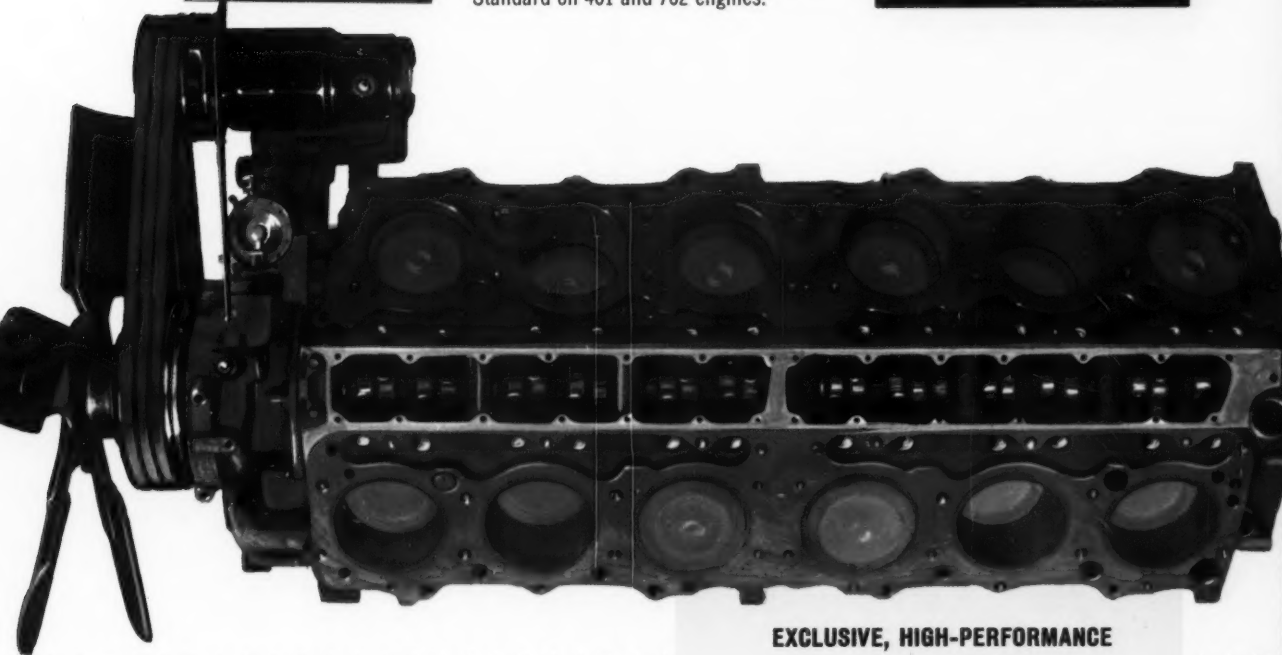
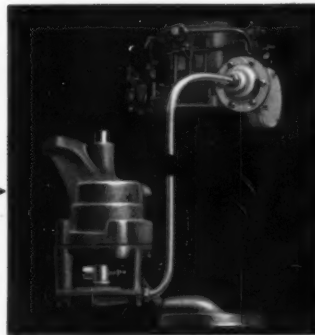


Greatest Pulling Power Of All! This 702 cu. in. Twin-Six gas engine produces the most usable power of any standard equipment engine. You get great reserve power at low engine speed to haul loads at part throttle under normal conditions . . . using reserve only for hills. You save fuel, reduce shifting up to 60% and get longer engine life.



← **Notice The Full 3-Inch Extended GMC Skirt** for the most rigid, full crankshaft support. New compact design, extra strong inner ribbing and staggered cylinders all increase strength and rigidity, decrease costly wear and failures.

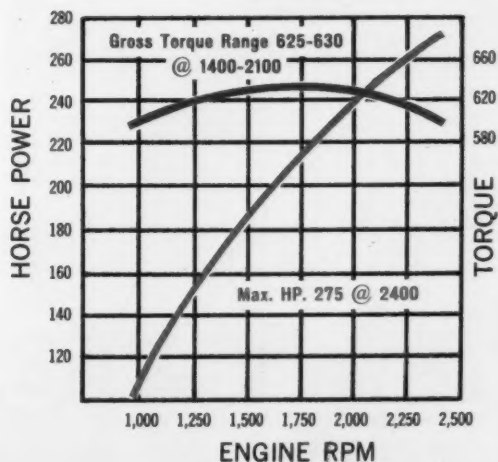
→ **Tamper-Proof, Positive Speed Control Governor!** This GMC patented hydraulic governor operates by direct oil pump pressure to accurately, reliably control proper operating speeds . . . adds to engine life. Standard on 401 and 702 engines.



Exclusive V-6 Power is standard in medium-heavy duty 90" Conventions along with easy-driving independent front suspension and easy-riding vari-rate rear springs on 4-wheel models. Ruggedly reinforced cabs with double-walls stand up on the roughest construction jobs. Heavy-duty models have the powerful Twin-Six.

ANY CONTRACTORS USING NEW GMC TRUCKS.

EXCLUSIVE, HIGH-PERFORMANCE GMC TWIN-SIX



1 NEW STEEL OR ALUMINUM, FRAME OR FRAMELESS DUMP TRAILERS in a wide range of capacities from 14 to 36 cubic yards. Front mounted telescopic hoist has 30 ton capacity, with 50° dump angle. Body has 3" deep hat section stiffeners on 18" centers, with boxed rails. Sloping, double-acting tailgate is air-released.



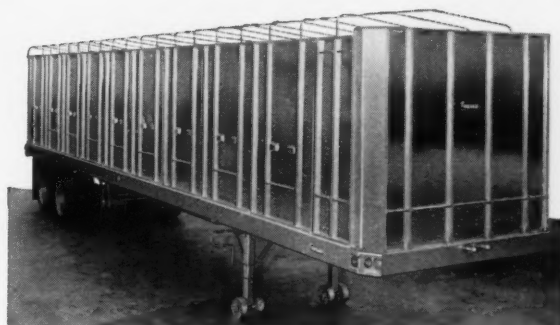
Rugged New Fruehauf Dumps Handle Your CONSTRUCTION JOBS BETTER!



2 MEDIUM-DUTY "WORKHORSE" STEEL PLATFORM— 26% increase in load-to-weight ratio. Extra weight savings permit gross capacity payloads to 45,000 pounds. Choice of side rail and pocket options. Wide choice of lengths and suspensions.



3 HEAVY-DUTY "WORKHORSE" STEEL PLATFORM— Rugged bridge-type construction for payloads up to 50,000 pounds. Pine, composite, or all-aluminum floors available. Wide choice of lengths and suspensions.



4 NEW HEAVY-DUTY ALUMINUM PLATFORM— 800 pounds lighter than a comparable steel platform! Designed to give operators maximum payload per trip with weight-saving aluminum. Removable interlocking side panels are available in 84", 72" and 48" heights. Complete range of length and suspension options.



"ENGINEERED TRANSPORTATION"
—The Key to Transportation Savings

◀ Circle 158 on Reader Service Card
AUGUST, 1961

FRUEHAUF TRAILER COMPANY

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☐ 2

☐ 3

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Name _____ (please print)

Company _____

Address _____

City _____ State _____

Circle 159 on Reader Service Card



Contractor on \$60 million dam improves with just three Gulf lubes ...

When McGee Bend Dam, Jasper, Texas, is completed, it will form the largest lake in the state (114,500 acres, 560 miles of shoreline). The mammoth earthen dam will be 19,430 feet long and rise 120 feet above the Angelina River.

Cosmo Construction Company, Houston, Texas, has already completed river diversion work and is now working on a part of the dam itself. The former required removal of 330,640 yards of unclassified material. The latter calls for moving 1,600,000 yards of selected fill.

The simplified lubrication program developed for all equipment on this project requires only three Gulf lubricants, plus a hydraulic oil. Adoption of this program has resulted in lower lubricant handling costs, elimination of application errors, and improved maintenance.

Gulf Super-Duty Motor Oil is used as crankcase oil for all equipment. Mr. Charles Kirl, Project Superintendent, tells why, "We've been inside a couple of engines to check on their condition and were pleased to see how clean they were." The other



Fuel and lube storage is located near access road that runs between borrow pit and dump area.



Left to right: T. H. Chambers, Gulf Representative; Charles Kirl, Project Superintendent, and Ray Baldwin, Gulf Distributor, discuss results of simplified lubrication of equipment used in project.

Two scrapers climb access road on way to borrow pit. The dam will stretch better than 19,000 feet across this valley.

maintenance

GULF MAKES THINGS RUN BETTER!

Gulf lubricants are: Gulflex® A for wheel-bearings; Gulf Multi-Purpose Gear Lubricant for transmissions, differentials and power takeoffs. Gulflube® Motor Oil H.D. is used for hydraulic systems.

Cosmo uses clean-burning Gulf diesel fuel for maximum power and long engine life. This high quality fuel also helps to keep filters, tanks and injectors free from harmful deposits.

Gulf products can help you get the most from your equipment with lower maintenance costs. May we have the opportunity to prove it on your next

project? Just contact your nearest Gulf office for a quotation. For helpful maintenance tips, and information on Gulf products write for a copy of the "Contractors' Guide."

GULF OIL CORPORATION
Dept. DM, Gulf Building
Houston 2, Texas



SP 10145

For Forming Bridge Abutments, Retaining Walls, Approaches, Grade Separations, Interchanges, and Decks....

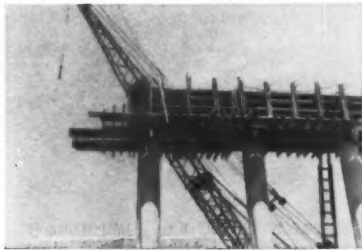
SUPERIOR has the **ACCESSORIES** and the **SYSTEMS** for bidding advantages *plus Profit!*

With increasingly keen competition on all types of concrete construction, contractors have found that the efficient and dependable SUPERIOR forming systems provide all-important bidding advantages. All the latest engineering advances and construction techniques are incorporated into SUPERIOR accessories and engineering service... which when translated into labor-saving means money. Shown at the right are some of the items in the complete line of SUPERIOR accessories which are available for use in the building of bridge decks, interchanges, and related projects. When hangers for decks, form ties for walls, or heavy-duty screed supports are needed, use SUPERIOR. The jobs shown below all used SUPERIOR accessories.

FREE ENGINEERING SERVICE

Our experienced engineering service is available to prepare form layouts, estimates, and quotations. This comprehensive service is offered free.

For Details Request New Bulletin BB-2



Pres-Steel Hanger
(patented)



Haunch Pres-Steel Hanger



Con-Beam Hanger



Wire Beam Saddle



Coil Beam Saddle



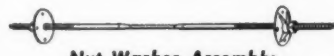
Cone-Fast Coil Tie



4-Strut Coil Tie



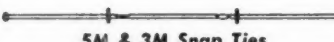
Tilt-Lock Assembly



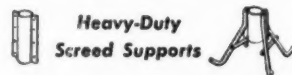
Nut Washer Assembly



Supertie Assembly



5M & 3M Snap Ties



**Heavy-Duty
Screed Supports**



Screed Chairs



**Open End
Tie Clamp**



**Threaded
Coil Rod**

SUPERIOR Concrete Accessories, Inc., 9301 King St., Franklin Park, Ill.
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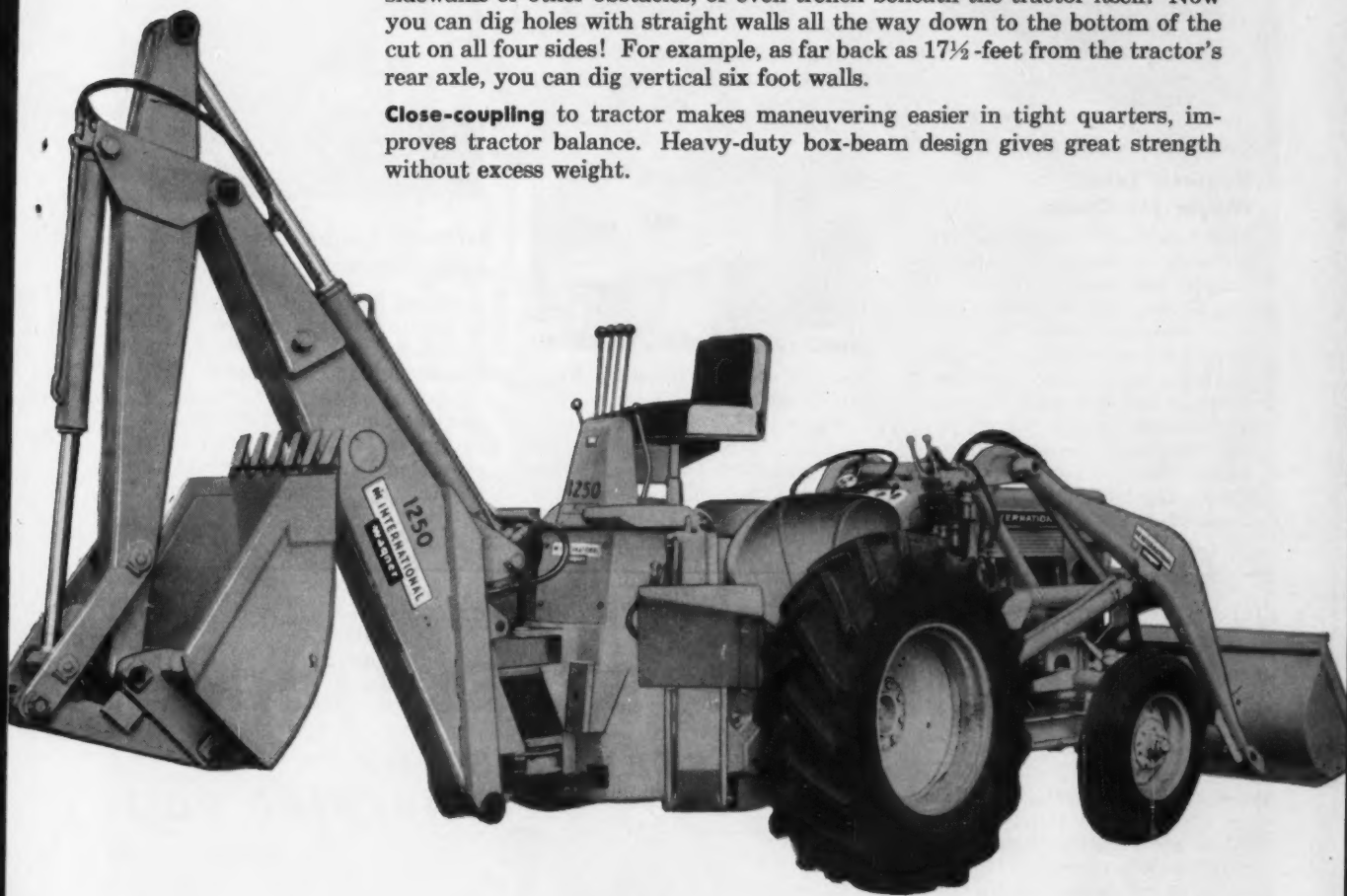
CONSTRUCTION METHODS

NEW PEAK IN DIGGING EFFICIENCY!

Here's smoother operation, greater all-out digging power in a 12½-ft backhoe. Near-zero-friction design of new International Wagner No. 1250 backhoe speeds action, puts more hydraulic power to work on digging.

Improved bucket mounting enables the "1250" to handle many digging jobs that only hand labor could do before. You can reach out to dig underneath sidewalks or other obstacles, or even trench beneath the tractor itself. Now you can dig holes with straight walls all the way down to the bottom of the cut on all four sides! For example, as far back as 17½-feet from the tractor's rear axle, you can dig vertical six foot walls.

Close-coupling to tractor makes maneuvering easier in tight quarters, improves tractor balance. Heavy-duty box-beam design gives great strength without excess weight.



Ball
trunnion
bearings
cut
friction
70%



Self-aligning spherical trunnion bearings are used at all major pivot points. A double trunnion bearing is used within the swing frame itself. Friction is 70% less, while destructive twisting forces and strains are swallowed harmlessly. Bearings provide exceptional wearing quality with a minimum of service.

Pair this efficient new digging tool with the economical 47 hp* International 340 or the heavy-duty 61 hp* International 460 for new high-speed trenching capacity. See your IH dealer soon for full details about the rugged "1250" backhoe and a tractor power-sized to your needs.

*Maximum engine horsepower at standard conditions



INTERNATIONAL HARVESTER

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.



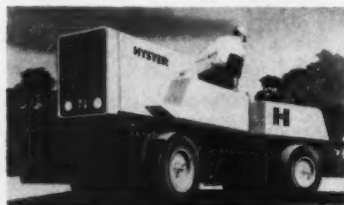
Magnetic Level Weighs 2½ Ounces

The Lev-L-All magnetic level contains a single easy-to-read bubble that offers accurate 45-deg, 90-deg, and horizontal readings. Weighing only 2½ oz, the Lev-L-All is 3½ in. long and 1½ in. high. The Alnico permanent magnets are concealed within its plastic body, which is heat, cold, and moisture resistant. Price: \$4.95.—Alan-Lea Intl. Inventions Corp., 380 Lexington Ave., New York 17, N.Y.

Circle 318 on Reader Service Card

Rubber-Tired Compactor Adjusts to Job

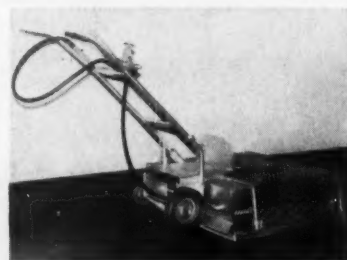
From the cockpit of Hyster's C500-A, a new nine-wheel compactor, the operator can control tire inflation and a pressurized 300-gal water system with a nozzle for each wheel. The unit also features individual oscillation of wheels. Standard 9.x20, 12-ply tires have a pressure range of from 35 to 100 psi, with optional tires going to 150. Wheels can be vertically oscillated up to 4 in. Centerpoint steering that is hydraulically powered provides



identical steering in either direction. A ⅝-in. wheel overlap gives full coverage on turns, which can be as sharp as 16 ft outside and 9 ft inside. The standard power plant is a Caterpillar diesel, model 311H, rated at 75 hp at 2,400 rpm. Optional is a Continental

model 244 gasoline engine rated at 82 hp at 2,600 rpm. The machine has a rolling width of 77 in. and weighs 40,500 lb with optional ballast. — Hyster Co., Peoria, Ill.

Circle 319 on Reader Service Card



Infra-red Heater Ends Flame Contact

No flame touches the material to be heated with this infra-red asphalt patching heater from Aeroil. Three heating tubes give off infra-red radiation that is reflected by three parabolic reflectors onto the surface to be heated. The self-contained heater has a rack for the lp gas that fires it.—Aeroil Products Co., Hackensack, N. J.

Circle 320 on Reader Service Card

To the contractor considering concrete precasting:

FMC IS FIRST IN STEEL FORMS

THEY STAY FIRST BY HELPING YOU

Providing the best forms, and backing them up with the best service keeps FMC on top. Profitable casting operations depend not only on steel forms that produce uniform, accurate members, but on forms that are designed for contractors' efficient use. FMC offers a broad line of quality steel forms for the contractor, plus years of form design experience that can save you dollars and time. FMC's capable, qualified engineering force and field engineers are always at your disposal for facts and figures on form design. Get the benefit of experienced engineering, superior service and the finest Form-Crete steel forms. Before you bid—contact FMC.

Send for your free copy of the #400 Form-Crete Catalog. Describes the entire form line and is a handy reference.



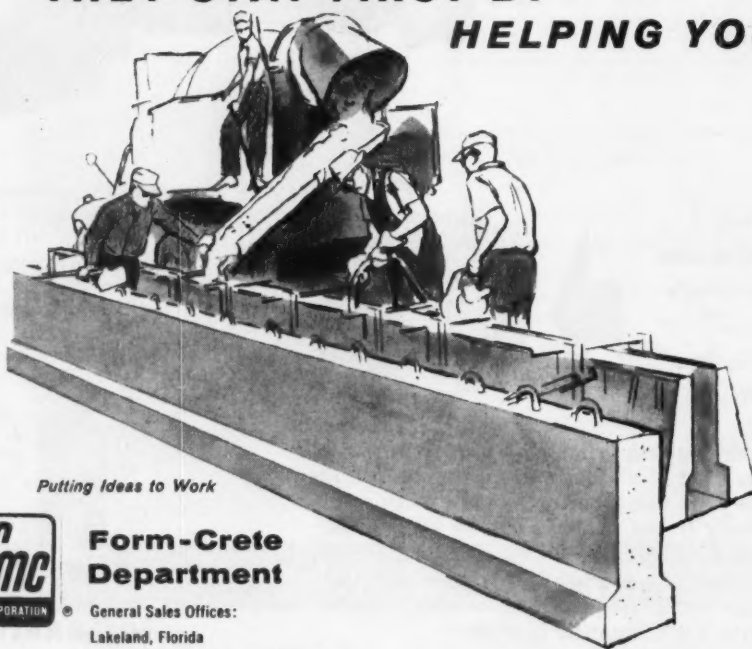
Putting Ideas to Work



Form-Crete Department

General Sales Offices:
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THE WORLD'S TOUGHEST OFF-ROAD TIRE

TOUGH STEEL FOR ROUGH JOBS



U. S. ROYAL SUPER CON-TRAK-TOR S.R.T.* Deeper tread at center and shoulders—steel reinforced for "chain-mail" resistance to cuts and impact failures • Each brass-coated steel filament is rubber insulated—can't rust out • Double-strength nylon cord body • More durable carcass • More tires retreadable • Prove-test them on your present equipment, specify them for your new equipment. Call your U. S. ROYAL DEALER.

U.S. ROYAL  **TRUCK TIRES**



**UNITED
STATES
RUBBER**
Rockefeller Center, New York

How PAYLOADER® Versatility



Pays-Off on 5 Different Jobs

These typical reports from five contractors tell what the H-90 "PAYLOADER" means in on-the-job earning power...

4-Mile Sewer in Texas — Sup't says, "This machine is indispensable. It works over pavement, gutters and walks with full loads, handles sand and materials at the *lowest possible cost*. I'd hate to tackle this work without the big 'PAYLOADER'."

Tearing Up 70 Blocks of Streets in Minnesota — Operator says, "This rubber tired rig is handy for stripping old blacktop right off the road . . . we work a block here and a block there, and I can *move to them as fast as any truck*. The bucket control is exact for windrowing in second gear. With a ----- machine, you couldn't do this kind of work."

Clearing Right of Way in New York — Vice Pres. says, "This single rig accomplishes everything needed in our work . . . in stump load-out alone, the H-90 (with 4-in-1 bucket) has cut our load-out costs about 1/2 over the previous method used."

Sand and Gravel Operation in Michigan — Operator says, "I've been driving cranes, dozers and loaders since 1936 but this is the *best front end loader I've used*. It's a wonderful machine, it operates so much easier than the ----- we have here."

Key Machine — There's no limit to the cost-cutting usefulness of a dependable "PAYLOADER" in new construction, repair and maintenance work. The mobility and work-versatility of these units save *time*, and the *high cost* of single purpose machines . . . pay off by protecting your profits on any job.

PROVEN 'PAYLOADER' MODELS

available in 20 models, up to 12,000-lb. operating capacity, for every material handling need . . . backed by more than 20 years experience in the design and manufacture of rubber-tired tractor-shovels.

HOUGH®



THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY



THE FRANK G. HOUGH CO.

706 Sunnyside Ave.,
Libertyville, Ill.

Send Bulletin No. 424 on the complete
PAYLOADER line.

12-B-6

Name _____

Title _____

Company _____

Street _____

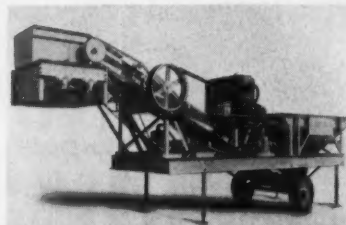
City _____

State _____

Circle 166 on Reader Service Card

EQUIPMENT NEWS...

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



Firm Adds Stabilizer Quintet

Five new stabilized base mixer models have been added to the Cedarapids line: 1A, 1B, 1C, 1D, and 2A. The Model 1 series are compact, portable units with either single shaft or twin shaft pugmills. All have 6½-cu yd bins. The Model 1A and 1C are single shaft models with capacities of 150-200 tph and 250-300 tph, respectively. The Model 1A has a 24-in. conveyor and 2-in. water pump, while the Model 1C has a 30-in. conveyor with a 3-in. pump. The Models 1B and 1D are twin shaft models with 200-250 tph and 300-450 tph, respectively. Model 1B uses a 24-in. conveyor and 2-in. pump, and Model 1D has a 30-in. conveyor and 3-in. pump. Model 2A has a 300-600-tph capacity and is designed primarily for stationary installation.—Iowa Mfg. Co., Cedar Rapids, Iowa.

Circle 321 on Reader Service Card



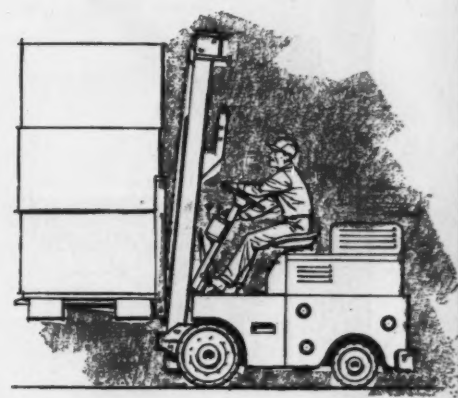
Lighter Lifting Tongs Available For Pipe

Crescent has introduced a new line of pipe lifting tongs that features faster pick-up and self-release when the pipe is landed. For loads from 2,500 to 4,000 lb, a light-weight series in heat treated aluminum alloy is available. Steel tongs are available for heavier weights. — Crescent Pipe Tongs Co., Bellflower, Calif.

Circle 322 on Reader Service Card

CONSTRUCTION METHODS

WHAT HAPPENED TO ALL THE POSTS ?



JOISTOLOGY* ELIMINATED THEM!

In the modern school or warehouse the fewer interior supporting posts or columns, the better. Clear, unobstructed floor space means more light, flexibility and storage area.

Designers, engineers and builders have found open web steel joists the practical way to span large open areas and still keep them open. These steel joists can bear heavy loads without intermediate support, with complete safety. What's more, they're lightweight, even in the largest sizes and spans, low in cost, and extremely easy to install. They adapt themselves readily to a variety of architectural styles.

Learn more about these handy structural members.

Write to the Steel Joist Institute for descriptive literature on design, performance and applications.

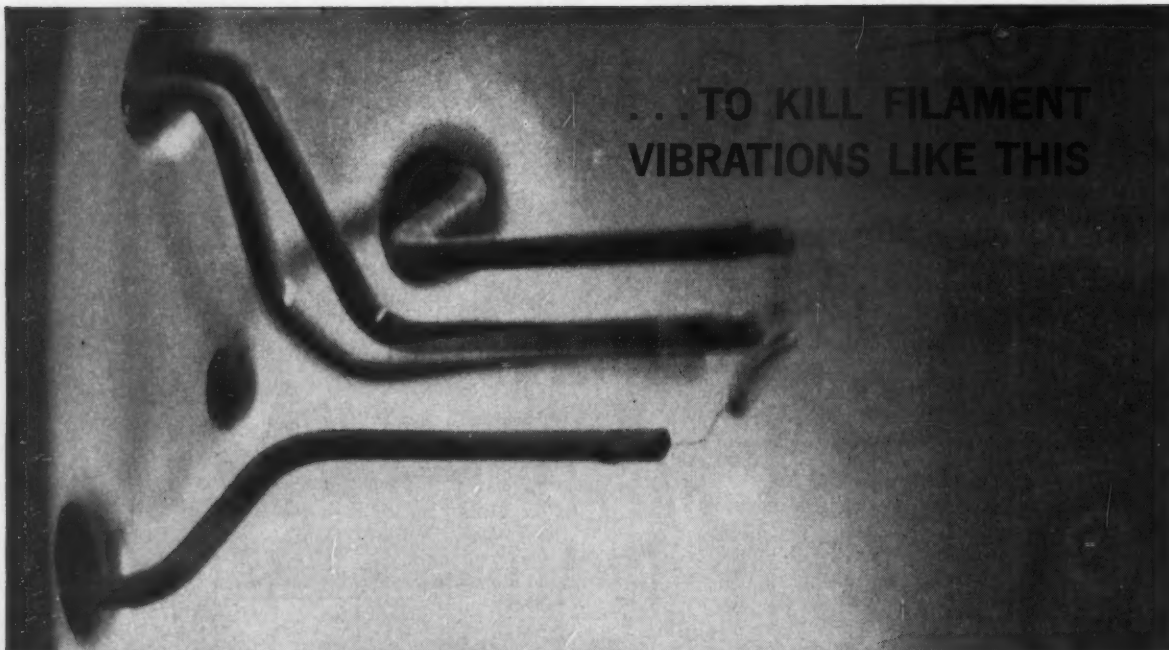
***Joist-ol-o-gy, N.** (As Webster *should* have defined it.) The art or science of designing and building more economical structures through the use of open web steel joists.

6108



Another in a series of advertisements placed in the public interest by the STEEL JOIST INSTITUTE, Suite 715, DuPont Circle Bldg., Washington 6, D.C.

Circle 161 on Reader Service Card

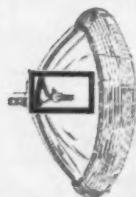


... TO KILL FILAMENT
VIBRATIONS LIKE THIS



NEW GENERAL ELECTRIC
MACHINERY LAMPS
HAVE THIS CERAMIC
SHOCK ABSORBER

Unretouched enlarged photos of portion in rectangle below.



These photographs show why the filaments in the new General Electric construction machinery lamp (bottom photo) can last up to three times as long as those in old style lamps (top photo). Although both lamps are being subjected to the same vibration in this test, the ceramic shock absorber in the new G-E lamp holds the

lead wires steady. Much less road shock and engine vibration are transmitted to the filaments, so they last longer.

The new G-E lamps with this ceramic shock absorber cost no more than the old style sealed beam construction lamps you're now using. These new construction equip-

ment lamps are available from your General Electric lamp supplier. Ask him for the new G-E lamps with the shock absorber . . . the lamps that last longer than the old style construction lamps but cost no more. These are headlamps #4480 (12-volt) and #4880 (24-volt) and floodlamps #4478 (12-volt) and #4578 (24-volt). General Electric Co., Miniature Lamp Dept. M-120, Nela Park, Cleveland 12, Ohio.

Progress Is Our Most Important Product

GENERAL  ELECTRIC

Circle 168 on Reader Service Card

New Product Briefs

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.

AIR NOZZLE has finger-tip control that reduces the hazards of high-pressure air and eliminates waste. Operator controls air flow by a precision air lock valve directly from line to job.—Aleco.

Circle 323 on Reader Service Card

RUST REMOVER that brushes on and flushes off with water is a multi-acid material, removing rust by chemical action. It is intended to replace costlier brushing, blasting or burning.—Sloan Chemicals.

Circle 324 on Reader Service Card

CARBURETOR CLEAN-OUT kit is available that contains material and directions for cleaning the carburetor while on engine. Gum-out cleaning fluid goes through jets and passages and expels dirt with exhaust.—Gumout.

Circle 325 on Reader Service Card

CUTTING TIPS for low pressure natural gas provide a wider range of flame adjustments for cutting thin plate steel. Used with Harris injector-type torches and attachments, the Series 6290 NX is available in three sizes.—Harris Calorific.

Circle 326 on Reader Service Card

PARSONS BACKHOE and Hydroclam attachments for Huber-Warco Maintainers can be attached and detached in minutes. The backhoe is available in four sizes with 10 to 15-ft digging depth.—Parsons.

Circle 327 on Reader Service Card

LOAD DISTRIBUTION has been improved on the Econmobile materials handling vehicle. The empty machine will now carry 7,400 lb in front and 9,315 lb in the rear, a total addition of 1,705 lb.—American Road Equipment.

Circle 328 on Reader Service Card

THE WASP is a 6½-lb, 14 in. plug hole drill designed for hard-to-reach places. For drilling ⅝ to ¾ in. holes, the unit has a low starting speed which simplifies collaring.—Atlas Copco.

Circle 329 on Reader Service Card

REMOVE SNOW

FASTER • EASIER

LESS COST



MONARCH

Monarch Power Hydraulic Controls

Get the jump on winter—get set now for faster snow removal with Monarch Power Hydraulic controls!

With Monarch, lift and lower your snow plow right from the cab . . . automatically. Instant up-and-down action with the flick of the wrist. A Monarch control is quickly installed. See your dealer or write for illustrated folder.



DYNA-
MIGHT
Battery-
Operated



HY-LO-
JACK
HY-LO
for
Jeep
Fan
Belt
Driven



MONARCH ROAD MACHINERY COMPANY
1821 Michigan St. N.E. Grand Rapids 2, Michigan U.S.A.

Circle 169 on Reader Service Card

CUTTING POWER!

**51 3-Inch Holes
In One Day
Through 4-Inch
Concrete Floors!**

A contractor drilling 5000 3-inch holes in a new office building finished **51 in one day, and once cut 21 in two hours!** Going through 3-4 inches of reinforced concrete with Longyear diamond bits took 1 to 1½ minutes, and Longyear diamond bit life was as high as 100 feet. The "305" drill was equipped with a new, compact vacuum hold-down unit, making set-up lightning-fast.



For more detailed information on application of Longyear drills, write Department 5A.



E. J. LONGYEAR CO.
76 S. Eighth Street, Minneapolis 2, Minnesota
Phone: FEderal 9-7631

Circle 253 on Reader Service Card

Save time . . . cut concrete forming costs . . . Be sure of results with . . .

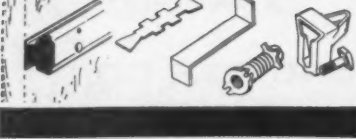
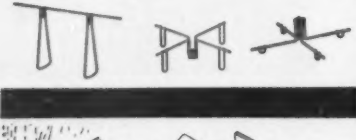
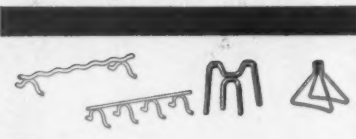
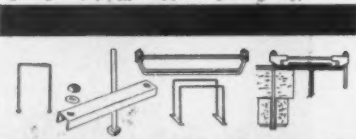
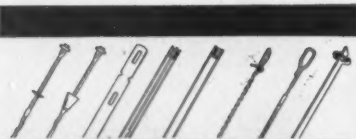
DAYTON SURE-GRIP Accessories

Concrete forming costs going up? We can help you bring them down with a combination of technical service, a complete line of accessories of recognized quality, and fast, reliable service from a single source. That source is your nearby DSG Distributor. He can help you eliminate delays and mistakes in planning, procurement and form production.

Cut your forming costs . . . have the dependable accessories you want when you want them by relying on Dayton Sure-Grip. Write today for our free catalog and prices.

**THE DAYTON
SURE-GRIP
& SHORE CO.**

113 KERCHER ST., MIAMISBURG, OHIO



Circle 170 on Reader Service Card

NEW PRODUCT BRIEFS . . .

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.

HIGH IMPACT amplitude is a feature of the Vibrajust Variable Impact Vibrator. The frequency ranges up to 500 vibrations per min. Uses will include moving powdered or granular materials in bins and hoppers.—Branford.

Circle 330 on Reader Service Card

NEW MODEL of the Neptune aluminum chair to support and center rebar and conduit in concrete forms comes in sticks of chairs, which are snapped off for installation.—Neptune.

Circle 331 on Reader Service Card

HOT TANK CLEANER for removing paint, light rust and some hard water scale is for heavy-duty cleaning and paint stripping operations. In mixtures of 6 to 16 oz per gal of water, the Magnus 614 is most effective near boiling temperatures.—Magnus Chemical.

Circle 332 on Reader Service Card

TRACK LINKS with increased durability are now available for Caterpillar's D7 Tractor, 977 Loader, 572 Pipelayer, D6 Tractor, 955 Loader and 561 and MD-6 Pipelayers.—Caterpillar.

Circle 333 on Reader Service Card

OIL FILTER removal is made easier by Proto's self-locking tool for removal of disposable filters. The tool grips the end of the filter.—Proto Tools.

Circle 334 on Reader Service Card

NO PRIMING is required for the Texsteam Series 9000 utility pump, a portable, double diaphragm unit. The 70-lb pump handles liquids containing abrasives, fibrous materials and 1/4 in. solids.—Texsteam.

Circle 335 on Reader Service Card

NEW EPOXY, a two-part thermosetting resin is for use in metal to metal bonding. Temperature range of NP 711 is from 40 to 250 deg F.—Miracle Adhesives.

Circle 336 on Reader Service Card

CONCRETOR-LINDEN climbing cranes are now equipped with a hydraulic climbing arrangement which operates by a remote control box.—B. M. Heede.

Circle 337 on Reader Service Card

SHORT CUT TO LONG LINES



Save Work and Speed the Job with NAYLOR Pipe and Wedgelock Couplings

For air, water and ventilating lines, you'll save time and money with this NAYLOR combination.

NAYLOR pipe is light in weight, easy to handle and install. Its lock-seamed, spiralwelded structure assures extra strength and safety.



WEDGELOCK couplings provide a positive connection securely anchored in standard weight grooved ends. Speed the job. A hammer is the only tool required to connect or disconnect them. Available in low-pressure and heavy-duty types.

Write for Bulletin No. 59 on pipe, fittings and couplings.



**NAYLOR
PIPE Company**

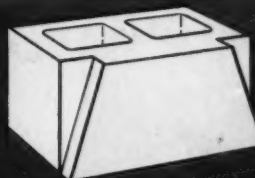
General Offices and Plant
1267 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office
60 East 42nd Street, New York 17, N. Y.

Circle 254 on Reader Service Card

CONSTRUCTION METHODS

► Great new things
are shaping up in concrete block



"Shadowal" is available from local block producers. Photo courtesy of National Concrete Masonry Association.

Atlas Masonry Cement provides the right mortar

for laying up new types of concrete masonry such as "Shadowal" block. The face of this 8 x 8 x 16 unit is recessed at an angle on each corner and is used to create a variety of geometric designs.

Whether standard units or the newer types of block are used, ATLAS MASONRY CEMENT continues to be the preferred cement for mortar. That's because it produces a smooth, workable mix... saves labor... cuts waste... helps assure a good bond... gives weathertight joints that are uniform in color. Complies with rigid ASTM and Federal Specifications. For information on masonry cement, write: Universal Atlas, Dept. M, 100 Park Avenue, New York 17, N. Y.

"USS" and "Atlas" are registered trademarks

M-84



**Universal Atlas Cement
Division of
United States Steel**

OFFICES: Albany • Birmingham • Boston • Chicago • Dayton • Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco

WHEN CONSTRUCTION JOBS CALL FOR SOIL COMPACTION

BARCO is the ANSWER!



When You're Figuring For The "Low Bid"—No other tool can give you the economy and dependability offered by Barco Rammers on high degree soil compaction for all kinds of projects—Highways, Freeways, Hydro-electric Power and Flood Control Dams, Airports, Bridges, Defense Sites, Buildings, and Housing Developments!

When You Have To Meet Tough Specifications—In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—**EASILY! EFFICIENTLY! ECONOMICALLY!** The Barco Rammer is especially useful for compacting fill in restricted areas. **ASK FOR A DEMONSTRATION.**

When You're Up Against A Tight Schedule—One of the biggest advantages offered by Barco Rammers is ability to handle work in minimum time. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench back fill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour. **When time is at a premium, BARCO PERFORMANCE PAYS DIVIDENDS — find out about it NOW!**

*Sold and Serviced by
the Nation's Leading Distributors*

BARCO RAMMER



BARCO MANUFACTURING CO.
512½ Hough St., Barrington, Illinois

Gentlemen:

**YES! I want to know about Barco Rammers
for Soil Compaction:**

Name _____

Company _____

Address _____

☐ Please send me the name and address of your nearest dealer.

☐ Without obligating me, I would be interested in a **DEMONSTRATION.**

☐ Please send General Catalog No. 621.

☐ Please send free bulletin on "SOIL COMPACTION COST DATA."

Circle 172 on Reader Service Card

NEW PRODUCT BRIEFS...

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.

ROTARY MIXER with 4-yd capacity has been added to the Chain Belt line of ready-mix equipment. The machine has plow-shaped blades for increased mixing action at slower rpm.—Chain Belt.

Circle 338 on Reader Service Card

SOIL SOLIDIFYING with a single-shot chemical grout gives sandy soils the characteristics of soft sandstone. The FA-40 can be diluted as much as 20 times its volume without preventing gelation.—Diamond Alkali.

Circle 339 on Reader Service Card

NEW END NOZZLE for spray bar prevents spraying of the curb and eliminates shields on bituminous distributors. Spray is directed back and along each side of remaining spray.—E. D. Etnyre.

Circle 340 on Reader Service Card

WATER LEVEL safety switch that disconnects pump motor prevents damage when source liquid is insufficient or pump loses its prime.—U. S. Gauge

Circle 341 on Reader Service Card

URETHANE FOAM is intended to replace pleated paper as a filter medium for dry-type air filters. The foam is 1 in. thick for greater filtration, and can be cleaned by washing and rinsing.—Harco.

Circle 342 on Reader Service Card

SELF-ADJUSTING BRAKES, Bendix Duo-Servo, are now supplied on all LW-Adams motor graders as standard equipment. —LeTourneau-Westinghouse Co.

Circle 343 on Reader Service Card

TRUCK TIRE with a three-rib bladed tread design allows 50% more mileage than previous 100-level Firestone tires. The transport-100 comes in 10.00-20 size with 1,008 traction blades in tire mold.—Firestone.

Circle 344 on Reader Service Card

POWER TROWEL has four blades that can be pitch-controlled by a lever on the handle. A high blade pitch stop permits burn-type finishes with the 44-in. rotary trowel.—Kelley Machine.

Circle 345 on Reader Service Card

Circle 173 on Reader Service Card ➤

CONSTRUCTION METHODS

TROJAN SAFETY CURVE LIFT ARMS

**BUILT
AS ARMS
SHOULD
BE...**



**Only Trojan's
box-type construction gives
greater strength & capacity.**

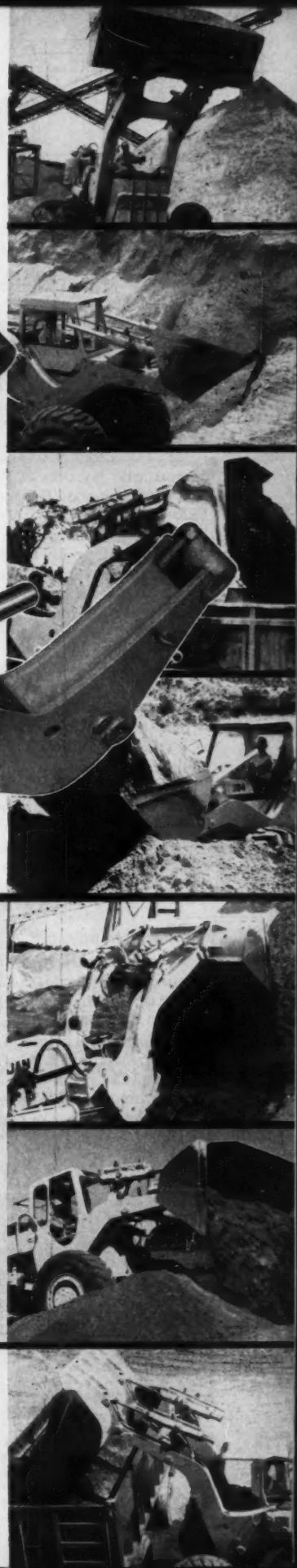
Many times stronger than single plate construction, Trojan's box-type design produces higher resistance to torsional loads and, with the tubular cross member, minimizes normal working stresses — results in more even load distribution. All fittings and couplings are exposed and easily accessible for faster maintenance. The safety curve box design with internal linkage assures greater operator protection — yet allows full visibility for fast, continuous production . . . Let the many advantages of Trojan's high performance design cut your operating and maintenance costs. Ask your local distributor for a feature by feature inspection.

TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

THE **YALE & TOWNE** MANUFACTURING COMPANY
TROJAN DIVISION
BATAVIA • NEW YORK

SEVEN MODELS TO CHOOSE FROM, 7,000 LBS. TO 24,000 LBS. CAPACITY

Circle 173 on Reader Service Card



AD NO 44-78

Michigan's L. A. Davidson sets of bridge* and road

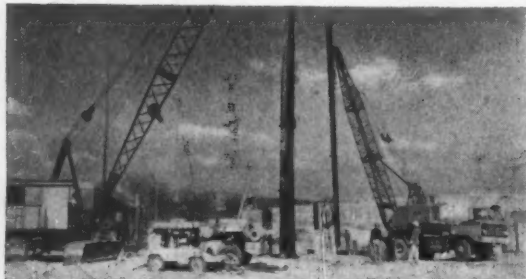
L. A. Davidson of Lansing, Michigan has established an outstanding record of bridge and highway building. A part of this contractor's total work for 1960 included the completion of 100* bridges. Experience, proper equipment and skilled manpower are required to produce this volume of work. But the man most responsible for this company's growth and success is its founder and present head, L. A. Davidson.

Mr. Davidson is one of America's important contractors who for over 30 years has helped change the face of the nation. He got his start in construction in 1920 working for Flint, Michigan's city engineer. From 1921-22 he gained broader experience in highway construction working for the state highway department as a project engineer. He then moved on to Illinois and worked as a superintendent for a contractor. From 1923-24 he gained additional experience in paving work with Siegel Contracting Company of Cleveland.

Shortly thereafter L. A. Davidson decided to go into business for himself and began bidding for sub contract work on small bridges in Flint, Michigan. His equipment at that time was little more than a truck. But Davidson soon established his reputation for good work and began bidding on bridges. His first contract was for \$5,000. By 1930 he moved his company headquarters to Lansing, Michigan which is still the home base of operations. Davidson gradually secured more bridge work and soon moved into concrete paving. Under his able direction and guidance, the company grew to its present status as one of Michigan's largest contractors.

Specialization pays off

While many contractors engage in wide diversification of work, L. A. Davidson has specialized in bridge and paving construction. Over the years, they have done airport and dam construction, railroad separation, etc. but the bulk of work is in bridge and paving for Federal, State and City government. Almost all of this work is done in Michigan. The major portion of Davidson's earthmoving is sub contracted to William Muehlenbeck, Inc. of Saginaw and Canonia Construction Co. of South Haven, Michigan.



\$6 million highway-bridge project in Brighton, Michigan. Pile driving for part of 17 bridges. Substructures on bridges were completed in 9 weeks.

L. A. Davidson completed \$23.4 million of construction in 1960, and an additional \$18 million of work was carried over into 1961. According to Mr. Davidson, the company does a significant amount of pile driving, including many difficult jobs that some contractors shy away from. The speed of operations in bridge work is achieved through the use of his own portable concrete mixing plants and transit mix trucks. His paving equipment spread enables them to average between 2,500-4,000 feet of 24 ft. paving a day. Davidson is also credited with building the first prestressed bridge built in the United States.

Employs 100 permanent workers and \$8 million of equipment

The scope of Davidson's construction activities requires a large inventory of construction machinery of all types. Some of the company's \$8 million worth of equipment is listed at the right. Davidson's volume of work requires a staff of 100 permanent employees and up to 700 workers when at full capacity.

An important segment of Davidson's operation is the production of aggregate with three portable aggregate plants. The company owns two quarries and the aggregate is produced for outside consumption primarily.

Davidson credits key personnel

The success of his company is not the result of one man alone, according to Mr. Davidson. Although he still plays a very active role in the company's operations, the responsibility for its management and direction rests primarily with a supervisory team of key personnel. These include his son, Dick Davidson who heads up the paving operation, Ken Davidson, who heads up Detroit, Andrew Zynda, his son-in-law in charge of bridge operations; Robert Mimms, Dick Noblet, Gerald Benedict, Clinton Schlaack; Orville Mayhew, bridge superintendents; Vern Scott and Vernon Mimms, superintendents of paving.

"We don't standardize", says Davidson

Davidson's vast equipment inventory embraces a wide variety of types and brands. Purchasing of this equipment requires careful appraisal and evaluation before a decision is made.



One of Davidson's many transit mix trucks shown pouring concrete for one of 17 bridge sub structures.

record pace construction

L. A. Davidson says:

"We don't standardize on equipment. We are constantly studying new machinery that fits into our operation. We ask our superintendents, foremen, operators and equipment superintendent about the performance of equipment. Top management holds meetings with our key personnel and all opinions and recommendations are weighed carefully before we decide on the equipment to be purchased. We also check other contractors."

In 1960 this contractor purchased approximately \$500,000 worth of new equipment. \$100,000 worth of trucks are purchased annually. The amount of materials required for Davidson's construction volume runs about 40% of the contract value.

Operates extensive maintenance program

L. A. Davidson's equipment efficiency is the result of an extensive maintenance program. The main location for this operation covers an area of 80 acres. It includes modern, well equipped buildings, equipment storage yards and the highway sign manufacturing segment of Davidson's operations. It requires a minimum of twenty men working full time to handle the maintenance of Davidson's equipment.

L. A. Davidson is a contractor whose business activities are as diversified as his interests. In addition to his construction company activities, he is engaged in oil well drilling, quarries, railroads, etc. His extensive travel to the Far East and Europe have been a source of education and information that Mr. Davidson has applied to his many successful business ventures.

Another source of information for L. A. Davidson and 13 of his key personnel is CONSTRUCTION METHODS AND EQUIPMENT magazine. The reasons why these construction men subscribe to CM&E is expressed by Mr. Davidson in his statement at the upper right. (Key personnel in William Muehlenbeck, Inc. and Canonia Construction Company also subscribe to CONSTRUCTION METHODS.)

As in the case of many of the nation's important contractors and their key personnel, CM&E plays an active role in this contractor's business. Editorial quality is the reason it is read and preferred by America's important contractors like L. A. Davidson.



Alma paving job on which Davidson averaged 400-500 feet of 24' slab, 9 inches thick, per hour.

L. A. Davidson, founder and head of L. A. Davidson, ... a subscriber to CONSTRUCTION METHODS since 1924 says:

“CONSTRUCTION METHODS is one of the real good magazines in the field. For a construction man, it's hard to beat. The articles are most informative and useful. Photos are used most effectively. We also read and make use of the good advertising.”



L. A. Davidson Equipment Inventory

- 33 Cranes & Shovels — Thew, Marion, Northwest, Koehring, Lima, Harnischfeger
- 29 Buckets, Dragline & Clam Shell — Hendrix, Owens, Williams
- 11 Buckets, Concrete — Insley, Gar Bro, Smith, Knickerbocker
- 14 Tractors — Caterpillar, Oliver, Allis-Chalmers, International
- 6 Field Offices
- 12 Space Heaters
- 11 Pickup Trucks — Chevrolet
- 9 Flatrack — GMC, Chevrolet, Reo, Studebaker
- 21 Dump Trucks — Reo
- 20 Truck Tractors — GMC, Mack
- 5 Transit Mixers — Reo, Rex
- 5 Semitrailers — Fruehauf, LaCrosse, Trailmobile, Standard
- 2 Tank Trailers — Fruehauf
- 14 Trailers — Dart, Rogers
- 7 Scrapers — LeTourneau-Westinghouse, Euclid
- 1 Angledozer — R. G. LeTourneau
- 1 Ripper — R. G. LeTourneau
- 1 Subgrader — Blaw Knox
- 5 Graders — Austin-Western, Galien, Caterpillar
- 1 Formgrader — Cleveland
- 7 Front End Loaders — Case, Hough, Clark
- 9 Pavers, Dual & Single Drum — Rex, Ransome, Newaygo
- 5 Spreader, Concrete — Jaeger, Jersey, Ulrich
- 6 Concrete Mixers — Jaeger, Rex, Challenge
- 2 Cement Storage Bins — Butler Bin
- 2 Cement Batching Plant — Butler Bin
- 7 Bins — Johnson, Butler
- 1 Aggrement Plant — Erie
- 8 Finishing Machines — Lakewood, Flex-Plane, Jaeger, Koehring
- 1 Finegrader — Buckeye
- 11 Vibrators — Maginnis
- 1 Concrete Surfer — Concrete Surfacing Machine Co.
- 1 Compactor — Jackson
- 1 Vibratory Compactor — Jackson
- 1 Rodding Machine — Whitman
- 9 Welders — Harnischfeger, Hobart
- 7 Steam Boilers
- 7 Hammers — Vulcan, Delmag
- 10 Air Compressors — LeRoi
- 3 Generators — Maginnis, Delco
- 14 Saws — Clipper
- 17 Pumps & Wellpoint System — Fairbanks-Morse, American Well Works, Layne-Northern, GMC, Thor, Moretrench, German-Rupp, Western Machinery
- 1 Concrete Breaker — Novo
- 1 Spray Machine — Flex-Plane
- 1 Wemco Mill — Western Machine Co.
- 1 Crusher Plant, Portable — Pioneer
- 2 Jaw Crushers
- 4 Screens — Simplicity
- 4 Screen & Log Washers — Eagle
- 1 Pneumatic Roller — Bros
- 3 Scales, Truck — Thurman, Howe
- 9 Conveyor — Barber-Greene
- 9 Belt Conveyors — Atlas, McLaughlin, Barber-Greene
- 1 Vibratory Screen — Cedar Rapids
- 1 Vibrating Feeder — Jeffrey
- 2-Way Radio Systems — Motorola

**Construction
Methods** AND
EQUIPMENT

A McGRAW-HILL PUBLICATION

He
can't
DO what
you want
...if he
can't HEAR
what you
SAY!

No need to scream
your head off uselessly! With
Audio Hailer you can project
spoken commands ... like a
harpoon ... over a half-mile
range ... in any direction!

Yet you are not "tied down"
to any external power source.
New "TP" (transistor-
powered) Hailer is a com-
pact, 5½ lb.,

"one-piece"
unit, self-
powered on
standard
flashlight
cells.



AUDIO
TP HAILER
transistor-powered
PORTABLE MEGAPHONE

Save your voice ... your time ... your
temper! Mail coupon for full description
and price list.

AUDIO EQUIPMENT CO., INC.
P.O. Box 192, Port Washington 39, N. Y.
Rush Audio "TP" Hailer catalog and prices
Name _____ Title _____
Company _____
St. & No. _____
City _____
or Town _____
Zone _____
(if any) State _____

Circle 176 on Reader Service Card

New Publications

These catalogs and bulletins from manu-
facturers contain useful information
about construction equipment and mate-
rials. To obtain a copy of the items you
want, circle the appropriate numbers on
the READER SERVICE CARD just in-
side the back cover.

THERMOSTATS — A brochure
entitled "Let's Talk Thermostats"
explains the problems of over-
cooling, the reasons for different
thermostats in summer and win-
ter, which thermostat to use with
certain types of antifreeze, the
proper type and model of thermo-
stat to use, and the effective life of
thermostats.—Standard-Thomson
Corp., Automotive Div., 152
Grove St., Waltham, Mass.

Circle 346 on Reader Service Card

TRACTOR SHOVEL — A spec
bulletin details the Model 114
Trojan, which has three inter-
changeable buckets from ¾ to
1 2/3 yd, 25-mph road speed, and
gasoline or diesel engine options.
—The Yale & Towne Mfg. Co.,
Trojan Div., Batavia, N.Y.

Circle 347 on Reader Service Card

CONCRETE ACCESSORIES —
More than 400 products are cov-
ered in Richmond's new hand-
book. It consists of 12 separate
bulletins of between four and 24
p. each, which are enclosed in a
loose-leaf cover that also contains
a cross index for products and
types of construction.—Richmond
Screw Anchor Co., Inc., 816-838
Liberty Ave., Brooklyn 8, N.Y.

Circle 348 on Reader Service Card

TRAILER AXLES—A 12-p. fold-
er describes Rockwell-Standard's
complete line of trailer axles, in-
cluding their three new series
that provide, along with their old
TK series, a capacity range from
14,000 to 30,000 lb.—Rockwell-
Standard Corp., Transmission &
Axle Div., Detroit 32, Mich.

Circle 349 on Reader Service Card

JAW CRUSHER PRIMARIES—
Bulletin 697 describes 18 differ-
ent models of portable jaw crus-
her primary plants. It contains
flow diagrams, specs, and field
photos of this equipment in op-
eration.—Pioneer Engineering,
Div. of Poor & Co., Inc., 3200
Como Ave S.E., Minneapolis 14,
Minn.

Circle 350 on Reader Service Card

CONCRETE VIBRATORS — A
bulletin describes Prime-Mover
flexible-shaft concrete vibrators,
featuring rolling weight heads
that deliver high-frequency vi-
brations at slow shaft speeds.—
The Prime-Mover Co., Muscatine,
Iowa.

Circle 351 on Reader Service Card

SCRAPERS—Owners report job
accomplishments of the 630A and
631A wheel tractor-scrappers in a
new Cat brochure. Reports are
published from 10 owners de-
scribing their results with the
machines. The automatic shift
transmissions are described in de-
tail, and so is the new 420-hp en-
gine.—Caterpillar Tractor Co.,
Peoria, Ill.

Circle 352 on Reader Service Card

PAVER FINISHER — Automatic
level control of bituminous mate-
rial is one of the features of the
Super Paver, described in Bul-
letin AP-100. The bituminous
paver-finisher also includes a
12-ton capacity hopper with hy-
draulic folding sides and a one-
piece screed design.—Blaw-Knox
Co., Mattoon, Ill.

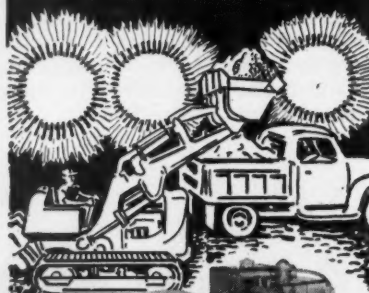
Circle 353 on Reader Service Card

Day and Night... KATOLIGHT Portable POWER PLANTS

KEEP CONSTRUCTION MOVING
AT TOP SPEED...ECONOMICALLY!

With instant, dependable, on-the-job electri-
cal power, work speeds up, costs go down.

KATOLIGHT Portable Plants give your crews
"plug-in power" anywhere...anyplace for
lighting, electrical tools and equipment.



THERE IS A SIZE
AND MODEL FOR
EVERY PORT-
ABLE, STANDBY,
CONTINUOUS USE
FROM 350 WATTS
TO 125 KW, UP TO
500 KVA ON REQUEST!

KATOLIGHT CORPORATION
BOX 891-106 MARKATO, MINNESOTA

Circle 255 on Reader Service Card



Hooking up the holes proceeds without danger of premature detonation from stray electric currents.



Delay connectors are attached to Primacord downlines; LEDC trunklines are cut and crimped into these connectors.



The dual connections are taped securely together and the ends of the Primacord downlines are tied.

ENSIGN-BICKFORD LEDC helps solve blasting noise problems at General Crushed Stone Quarry

The Glen Mills Quarry of the General Crushed Stone Company at Glen Mills, Pa., is located in the heart of a residential area. *And its neighbors don't like noise!*

The quarry produces aggregate from hard granite gneiss, very blocky and seamy. High explosives are used with Primacord® downlines for in-hole initiation. These downlines are hooked into a surface system of LEDC trunklines and Delay Connectors.

Danger of Prematures Minimized

Blasts are set off at a specified time each day. This means that loaded holes may stand for several hours before blast time. To minimize danger from stray electric currents, the electric blasting caps are never attached until the last minute.

The use of trunklines of Ensign-Bickford Low Energy Detonating Cord has practically eliminated the noise problem—and without danger of premature shots from stray currents.

This blast was set off on December 6, 1960. It consisted of eight 7-in., 50-ft. holes at 15-ft. intervals in a line 20 feet back of the base of a 46-ft. face. Loading was under the direction of Harry Kemery, Superintendent, and Morton McGuirk, General Quarry Foreman. High explosives were used with two primers in each hole, initiated by Plastic Wire Countered Primacord downlines.

A continuous line of LEDC was laid from Hole No. 8 to Hole No. 1 and back again, forming two trunklines. Delay Connectors were attached to each downline, and the trunklines were cut and crimped into the Connectors, which were then taped securely together.



Two Electric Blasting Caps were taped onto the Primacord downlines at No. 1 Hole, which fired instantaneously. Succeeding holes were progressively delayed 15 milliseconds.

Noise was no problem!... just the normal thud of explosives breaking rock.

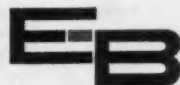
Ensign-Bickford LEDC is a Low Energy Detonating Cord with two grains PETN per foot, encased in a lead tube and protected by a plastic jacket. It detonates throughout its entire length at nearly four miles per second, but detonation noise is *low*. 150 feet of LEDC makes no more noise than a single blasting cap!

LEDC will not directly initiate Primacord or other cap-sensitive explosives. It is used with connectors developed by E. I. du Pont de Nemours & Co., Inc. LEDC is made only by Ensign-Bickford. Both are available through all explosives manufacturers.



If you have blasting noise problems, LEDC may be the answer. Write for free bulletin; also a free copy of the new Primacord catalog and manual is available through your explosives manufacturer—or write giving your company name.

THE ENSIGN-BICKFORD COMPANY
Simsbury, Connecticut • Since 1836



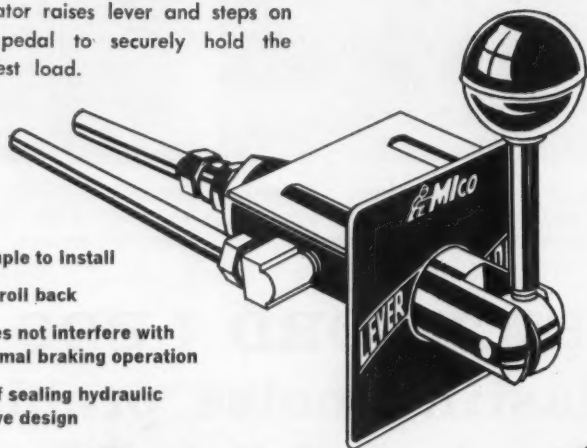
Circle 177 on Reader Service Card



HYDRAULIC PARKING LEVER LOCK

Operator raises lever and steps on foot pedal to securely hold the heaviest load.

- Simple to install
- No roll back
- Does not interfere with normal braking operation
- Self sealing hydraulic valve design



Post Hole Diggers



Cement Mixers



Ditch Diggers



Dump Trucks



Tow Trucks

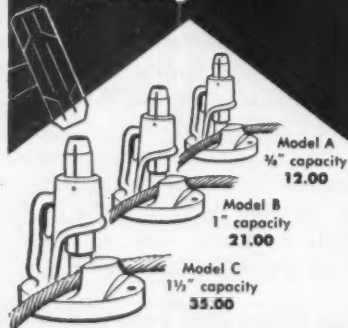
MINNESOTA AUTOMOTIVE, INC.

1101 North Front Street

Mankato, Minnesota

Circle 178 on Reader Service Card

WITH A
HAMMERBLOW...
3 SHARP RAPS
CUT WIRE ROPE
CLEAN...leave it
round, ready for splicing
or threading



Write for name of your
nearest stocking distributor

HAMMERBLOW
WIRE ROPE CUTTER CO.

19 Preffit Ave. • Springfield, N. J. • MErcury 5-7787

Circle 256 on Reader Service Card



MAYO KOEPE HOISTS

... offer lower initial costs, greater day-to-day economy for tunnels and small mines.

FREE Bulletin 20-A illustrates and describes installations of Mayo Koepe Hoists, Head Frames, Sinking Frames and other shaft equipment. Send for your copy today.



MAYO
TUNNEL AND MINE
EQUIPMENT
LANCASTER, PENNA.

Circle 257 on Reader Service Card

NEW PUBLICATIONS...

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.

TOOLS—A 128-p. catalog details Snap-on's line of wrenches and hand tools for production assembly, maintenance work, and product service. The catalog also describes tools such as manual and hydraulic gear pullers, electric drills, sanders, grinders, and electronic and electrical instruments for diagnosing engine operation.—Snap-on Tools Corp., 8042 28th Ave., Kenosha, Wis.

Circle 354 on Reader Service Card

TIMBER PILES — "Pressure Treated Timber Foundation Piles for Permanent Structures," a 62-p. book, includes design and driving data, graphs, tables, and formulas, as well as information on typical air, steam, and diesel hammers. Detailed reports of five recent loading tests show how to reduce foundation costs by increasing ultraconservative design loads from 15 tons to 35, 40, and 50 tons for timber piles. Price: \$1.50 a copy, postpaid.—American Wood Preservers Institute, 111 W. Washington St., Chicago 2, Ill.

Circle 355 on Reader Service Card

DRIERS—A 12-p. catalog illustrates Cedarapids portable and stationary electric motor or combustion engine-driven drier units. Catalog AP-28 describes how the driers operate on the counter-current flow principle, using the hottest gases for final drying.—Iowa Mfg. Co., Cedar Rapids, Iowa.

Circle 356 on Reader Service Card

TWO-WAY RADIOS — Bulletin ECR-793, "Complete Control with Two-Way Radio," describes how mobile communications provides close coordination between field and office. — General Electric Communication Products Dept., P.O. Box 4197, Lynchburg, Va.

Circle 357 on Reader Service Card

LUMBER FACTS—A new, 56-p. edition of "Lumber Industry Facts" contains data on forest resources, lumber production, consumption, stocks and shipments, and financial statistics.—National Lumber Manufacturers Assn., 1319 18th St., N.W., Washington 6, D.C.

Circle 358 on Reader Service Card

CONSTRUCTION METHODS



Now a new converter with a 3.6:1 ratio and **POWER-LOAD-LOWERING SAFETY, TOO**

Now, from Allison, comes a converter with new efficiency, new design elements, new low prices that gives you the safety of power-load-lowering and 3.6 to 1 stall-torque ratio too.

It's the new Allison TC-400 TORQMATIC Converter, a breakthrough in converter design from the people who make the world's most complete line of hydraulic drives.

The TC-400 is as new as tomorrow — but incorporates the time-proved TORQMATIC design features which for years have demonstrated their merit on tough job after tough job.

It can handle from 150 to 250 horsepower, is far more efficient than other converters in its range. It's available with a front disconnect clutch, industrial or automotive flange, tailshaft governor and integral charging pump for operating customer transmissions.

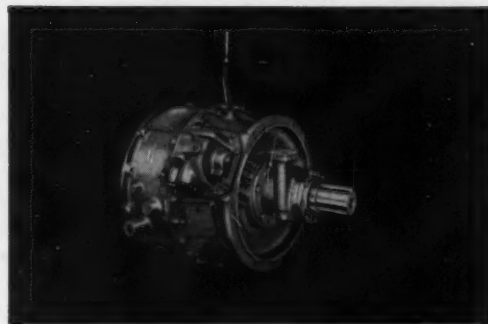
And this 3-element converter offers you a choice of 3 different stall-torque multiplication ratios—from 2.9 to 3.6 to 1—at no extra cost.

Want the full story? Mail the coupon—today.

Allison TORQMATIC
TORQMATIC® DRIVES

The World's Most Complete Line of Hydraulic Drives

*Over 980 Models used by 108 Manufacturers in
100 to 525 H.P. Equipment*



ALLISON DIVISION OF GENERAL MOTORS
DEPT. CM-3 INDIANAPOLIS 6, INDIANA
Please send me application data on your
TC-400 TORQMATIC Converter.

Name

Title

Company

Address

City Zone State

Circle 179 on Reader Service Card



172 CU. IN. 4-CYL.

*Built to handle any job
in the 172-, 220- or
330-cu. in. range!*



330 CU. IN. 6-CYL. POWER UNIT

DEPENDABLE FORD DIESELS... truly modern...truly economical!

All three highly efficient and economical Ford Diesels—the 172-, 220- and 330-cubic-inch model—offer such advanced features as:

COMPACT DESIGN . . . Ford Diesels develop more horsepower per pound of engine weight *than ever before possible!*

SUSTAINED HIGH TORQUE . . . necessary for "hanging onto" heavy loads without stalling.

SUPERIOR STARTING . . . all Ford Diesels offer a 12-volt electrical system for faster starting.

GREATER ECONOMY . . . such features as Free-Turn overhead valves and replaceable cylinder sleeves reduce maintenance and downtime, increase engine life and provide easier servicing.

PARTS AND SERVICE . . . high quality, low-priced Ford parts are as near as your Ford Dealer, for service *when you need it!*

For peak performance *all* the time, and the *minimum* in downtime, call or write us today. We'll be happy to help you select the right power for your job!

ENGINE SERIES		172 FOUR DIESEL	220 FOUR DIESEL	330 SIX DIESEL
Basic Model		DD	X	Y
Type		4-Cyl. O.H. Valve	4-Cyl. Diesel	6-Cyl. Diesel
Bore and Stroke—Inches		3.9 x 3.6	3.94 x 4.52	3.94 x 4.52
Displacement—Cubic Inches		172	220	330
Brake Horsepower	Dynamometer	59 @ 2400	62 @ 2400	99 @ 2400
	80% Dyn. BHP	47 @ 2400	49 @ 2400	79 @ 2400
Torque	Dynamometer	140#' @ 1200	151#' @ 1600	235#' @ 1600
	80% Dyn. BHP	112#' @ 1200	121#' @ 1600	189#' @ 1600
Compression Ratio		16.8 to 1	16 to 1	16 to 1

**YOUR JOB IS WELL-POWERED
WHEN IT'S FORD POWERED!**



INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 135, DEARBORN, MICH.

West of Rockies write to:

→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.

→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

Circle 180 on Reader Service Card

Advertisers' Literature

Listed below is free material offered in this issue's advertisements received up to July 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

DUMP TRAILERS—Fruehauf has literature on steel or aluminum dump trailers and platform.—Fruehauf Trailer Co.

Circle 359 on Reader Service Card

TRACTOR-LOADER — Bulletin LM describes an Eimco front-end loader designed for rock handling.—Eimco Corp.

Circle 360 on Reader Service Card

PAVING EQUIPMENT—The portable Cedarapids G40A asphalt plant is covered in Bulletin AP-26, permanent plants in AP-27.—Iowa Mfg. Co.

Circle 361 on Reader Service Card

AIR POWER—A complete line of coordinated air-power products is the subject of a new booklet.—Schramm, Inc.

Circle 362 on Reader Service Card

LUBRICATOR—Graco Convoy Lubers are described with illustrated equipment arrangements and specs in a booklet.—Gray Co., Inc.

Circle 363 on Reader Service Card

BLAST NOISE—Low energy detonating cord, Primacord downlines, and connectors are described in a bulletin.—Ensign-Bickford Co.

Circle 364 on Reader Service Card

FORMING ACCESSORIES—Concrete forming accessories and their prices are covered by a catalog.—Dayton Sure-Grip & Shore Co.

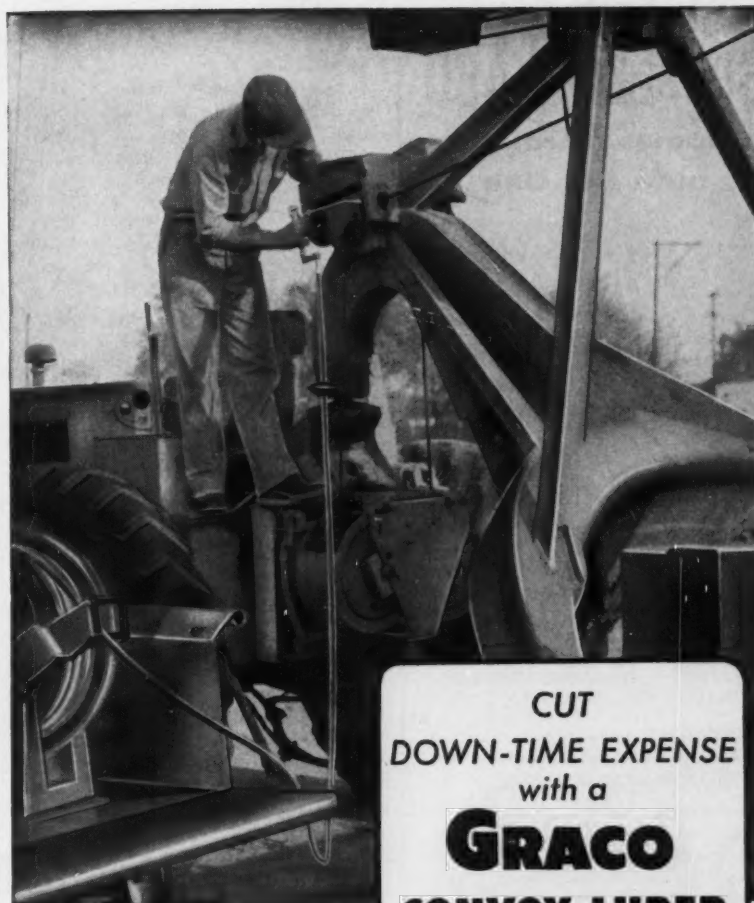
Circle 365 on Reader Service Card

STEEL FORMS—Symons Steel-Ply forms, brackets, and their uses are described in a catalog.—Symons Clamp & Manufacturing Co.

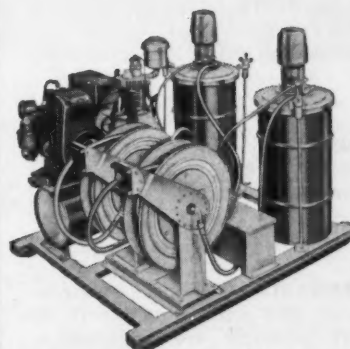
Circle 366 on Reader Service Card

PAYLOADERS—The 20-model Payloader line, with units up to 12,000-lb capacity, is the subject of bulletin 424.—Frank G. Hough Co.

Circle 367 on Reader Service Card



CUT
DOWN-TIME EXPENSE
with a
GRACO
CONVOY LUBER



Every minute you spend maintaining your equipment costs you money! That's why it will pay you to investigate a Graco Convoy Luber.

Designed for on-the-spot lubrication . . . these lubers work to provide fast greasing, oiling and air service in the field.

You pump lubricants direct from original shipping drums . . . save equipment transportation time . . . cut costly breakdowns drastically by maintaining around-the-clock lubrication service.

With Graco on the job, preventative maintenance can be fast and systematic . . . and scheduled lubrication of equipment means longer equipment life, less down-time.

Graco Convoy Lubers are available in many sizes and any combination of reels, pumps, compressors, or hoses. See your Graco dealer today for more details on the combination to meet your job requirements.

FREE! Graco Idea Book describes and illustrates typical equipment arrangements, gives specifications, explains how to "job plan" your lube truck. Send for your copy today!

GRACO
ENGINEERS AND MANUFACTURERS

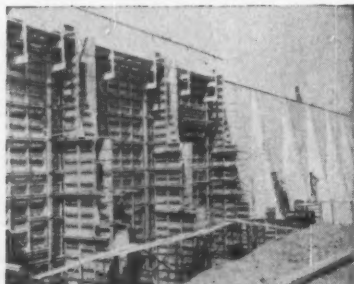
GRAY COMPANY, INC.

846 Graco Square
Minneapolis 13, Minnesota

See Phone Book Yellow Pages "Lubricating Equipment" for Graco Suppliers

Circle 181 on Reader Service Card

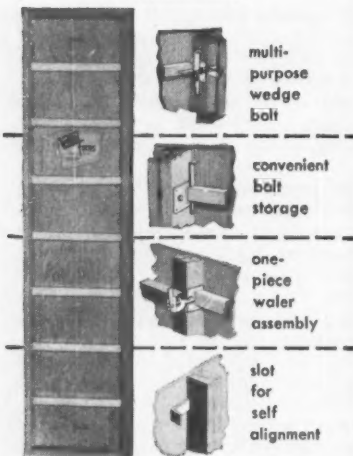
Again...
SIMPLEX-WACO
 Comes Through
 on a Big One



adaptability and flexibility
 of Simplex-Waco Forms
 proved on giant shopping center

- Simplex-Waco Forms went up with ease in forming 32' battered wall and counterforts at suburban Minneapolis' Southdale Shopping Center.
- Robertson Q. panels nailed to Simplex-Waco panels to produce architectural finish in other parts of project.
- Forms were used both vertically and horizontally . . . proving Simplex-Waco flexibility! Over 26,000 sq. ft. of forms used on this project.
- Forms available on sales or rental/purchase plan.

**DISTRIBUTORSHIPS OPEN
 IN CHOICE AREAS**



Send Your Plans for Free
 Layout and Cost Estimate



**SIMPLEX INDUSTRIAL
 FORMS, INC.**

5629 Industrial Avenue
 Rockford (Loves Park) Illinois
 Circle 182 on Reader Service Card

AD LITERATURE...

Listed below is free material offered in this issue's advertisements received up to July 15. To get the items you want, circle appropriate numbers on the **SERVICE CARD** inside the back cover.

POWER PLANTS—Katolight portable power plants for lighting and electrical equipment are the subject of a folder.—Katolight Corp.

Circle 368 on Reader Service Card

HOSE FITTING—Bulletin 651 tells of the Iron Mike reusable high pressure hose fitting and 1509 hose.—Aeroquip Corp.

Circle 369 on Reader Service Card

DREDGES—The Dragon line of portable excavating dredges is described in Bulletin 980.—Ellcott Machine Corp.

Circle 370 on Reader Service Card

WIRE ROPE—A booklet lists the diameter, construction, lay and grade of wire rope for 50 jobs.—American Chain & Cable Co.

Circle 371 on Reader Service Card

PIPE AND COUPLINGS—Pipe and Wedglock couplings, for air and water lines, are described in Bulletin 59.—Naylor Pipe Co.

Circle 372 on Reader Service Card

COMPACTOR—Catalog 621 describes Barco Rammers. Another bulletin lists soil compaction cost data.—Barco Manufacturing Co.

Circle 373 on Reader Service Card

HOISTS—Portable hoist from 3,000 to 42,000 lb capacity are covered in Bulletin 34.—Clyde Iron Works, Inc.

Circle 374 on Reader Service Card

LUBRICANTS—Helpful maintenance tips and information on Gulf products are included in Contractors' Guide — Gulf Oil Corp.

Circle 375 on Reader Service Card

MEGAPHONE—A transistor-powered, 5¼-lb megaphone that works on flashlight cells is the subject of a catalog.—Audio Equipment Co.

Circle 376 on Reader Service Card

CONSTRUCTION SERVICE—Armco's construction service, including installation of metal drains and conduits, is described in a catalog.—Armco

Circle 377 on Reader Service Card

**SEARCHLIGHT
 SECTION**

(Classified Advertising)
 EMPLOYMENT — BUSINESS
 EQUIPMENT — USED OR RESALE
OPPORTUNITIES

DISPLAYED RATE

The advertising rate is \$21.75 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

Employment Opportunities \$37.00 per inch, subject to agency commission.

An advertising inch is measured ⅜" vertically on one column, 3 columns—30 inches—to a page.

UNDISPLAYED RATE

\$2.10 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Positions Wanted undisplayed advertising rate is one-half of above rate, payable in advance.

1953 Link Belt Model LS-85 Excavator 7A1936, operated by a Model D-318 Caterpillar diesel engine. Price—\$7,500.

1948 P. & H. Model 150 Excavator, operated by a 1955 Model 271 G.M. diesel. Price—\$2,500.

Two Mack diesel engines—Model END673—Mack Thermodyne Diesel. 175 H.P., 673 cubic inch displacement.

One with 13,925 miles, 986 hours—Price—\$2,500.

One with 2,587 miles, 152 hours—Price—\$3,000.

PETER B. GERMAN INCORPORATED
 Morehouse Highway Fairfield, Connecticut
 Tel. EDison 5-8105

Circle 258 on Reader Service Card

BUY SELL RENT
USED STEEL

Beams—Pipe & Casing—Plate—BP's—RR
 Trestles—Bridges
LEOPOLD COHEN IRON CO.
 3000 S. Kedzie Chicago 23, Ill. BI 7-6336

Circle 259 on Reader Service Card

NYLON TRUCK TIRES

GUARANTEED
 BEST PRICES & QUALITY
 Write For Complete Price List
HARMO TIRE & RUBBER CO.
 1800 W. Fort T Ashmo 5-7944 Detroit 16, Mich.

Circle 260 on Reader Service Card

**If there is anything
 you want . . .**

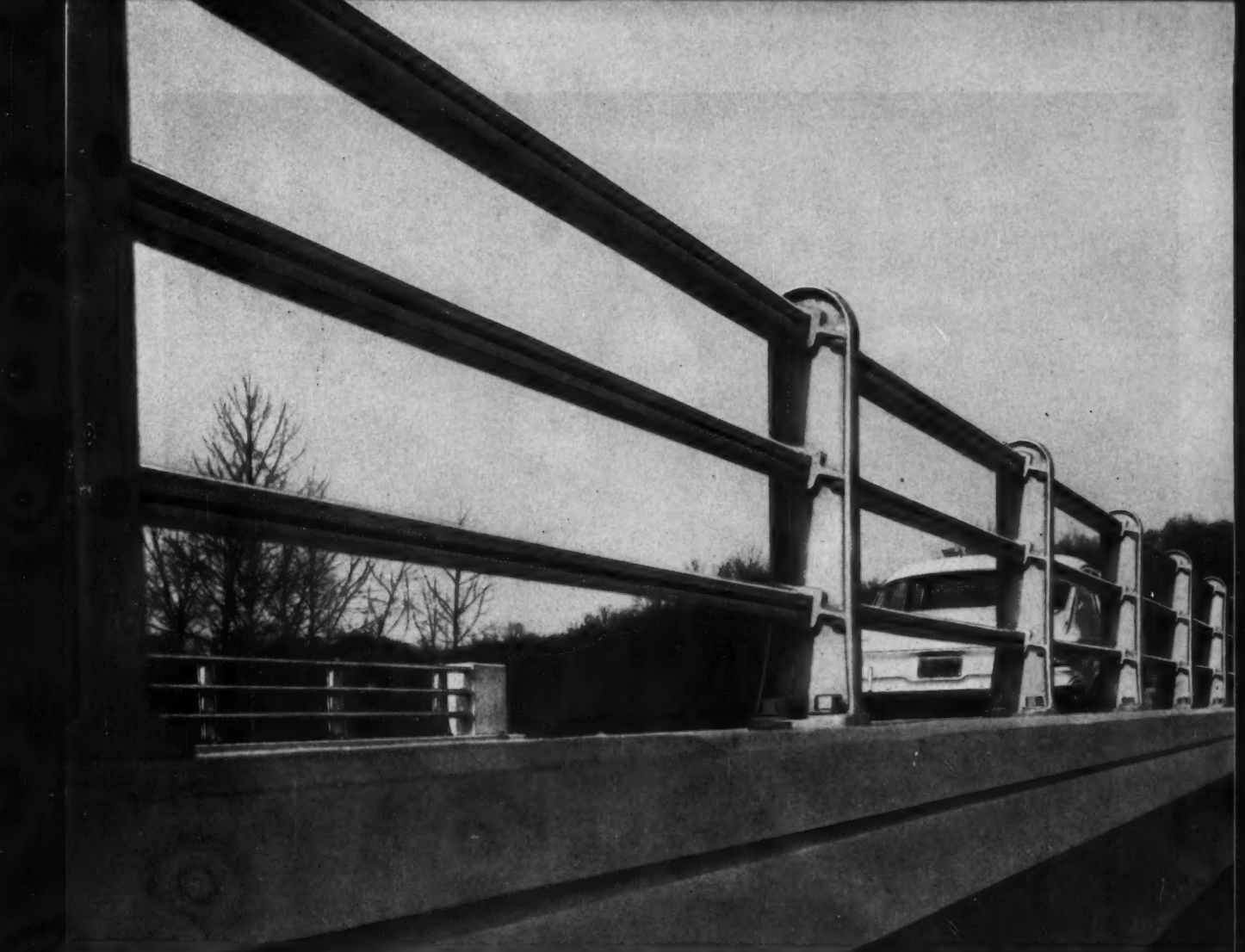
that other readers
 of this paper
 can supply

**or—something
 you don't want**

that other readers
 can use,
 advertise it in the

**SEARCHLIGHT
 SECTION**

CONSTRUCTION METHODS



Galvanized for years of service

BETHLEHEM PERFECT VISION BRIDGE RAILING

When you install Bethlehem Perfect Vision Bridge Railing, you can count on years of service, free from unsightly corrosion. Galvanized to meet all ASTM specifications, Bethlehem Bridge Rail will, under normal conditions, last as long as the bridge itself. The posts are ASTM A-47 malleable iron castings.

Send for our free booklet on Perfect Vision Bridge Rail. It gives full specifications and describes test data in detail. Get in touch with the nearest Bethlehem sales office, or write directly to us at Bethlehem, Pa.

IT'S THE RAILING WITH EYE APPEAL

- Neat, trim appearance . . . unobstructed view.
- Sturdy protection—meets ASHO strength specifications.
- Easy installation . . . delivered ready to install . . . just a few nuts to tighten.
- Damaged rails easily replaced.
- Variable post spacing.
- Four styles available—one- and two-rail for parapets; three- and four-rail for curb and sidewalks.



*for Strength
... Economy
... Versatility*

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL





**to stay
in the black...
Specify
Leschen**

RED-STRAND!

Black... the most attractive color in bookkeeping. There's no magic formula for staying in the black, but careful consideration of the right type and make of wire rope can cut costs substantially—10%, 20% or more.

RED-STRAND users are accustomed to longer-than-expected wire rope service, because higher-than-catalog-rated quality is built into the rope.

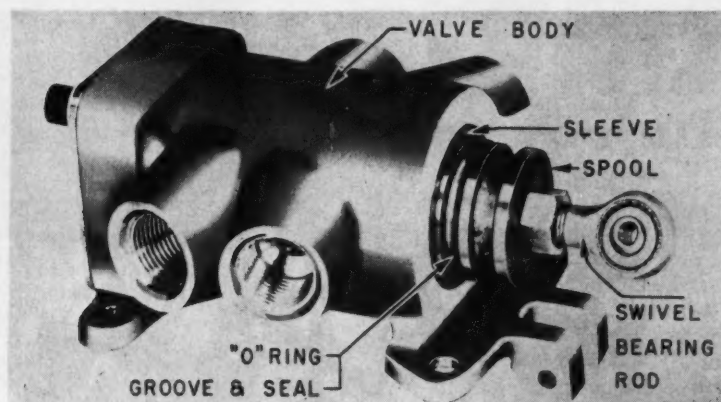
They know that Leschen distributors and field men make sure they have the best rope construction for the job at hand. They know, and you can too, that for wire rope and sling needs—specify RED-STRAND and stay in the black! For the name of your nearest Leschen distributor write: Leschen Wire Rope Division, H. K. Porter Company, Inc. 2727 Hamilton Avenue, St. Louis 12, Mo.



**LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.**

Circle 184 on Reader Service Card

Maintenance Shop...



STEERING CONTROL VALVE (left)—

Valves are precision-built components that require careful handling. Special care must be taken to avoid damaging bore surfaces.



How-to-Repair Tips For Hydraulic Systems

THE FIRST of two articles on the care of hydraulic systems (*CM&E*, June, p. 209) described troubleshooting procedures that help to locate faulty components of a system. This article will concentrate on how to repair components after the cause of trouble has been isolated.

Manufacturers supply specific instructions for the servicing and repairing of hydraulic components on their machines, but there are general rules that apply to all systems.

This article will deal with general maintenance requirements for the three basic components of a hydraulic system: valves, pumps and cylinders.

Valves in a hydraulic system are precision parts that require careful handling. The plungers and housing of plunger-type valves are built to such close tolerances that they are mated at assembly and cannot be interchanged. When plungers or plunger bores become worn, rusted, scored or eroded, the valve must be replaced.

When removing and disassembling valves for inspection or re-

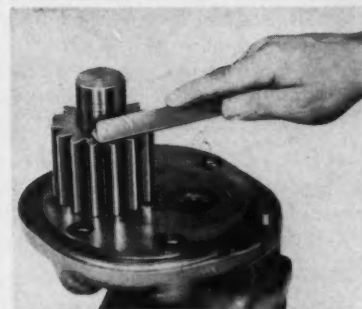
placement of springs, O-rings, or other replaceable parts, take care to avoid damaging the critical plunger and plunger bore surfaces. Use the proper tools and avoid the use of excessive force in separating parts.

Before reassembly, make sure all valve parts are clean. Rinse the parts in a suitable solvent and then apply a rust-inhibiting hydraulic oil. When remounting the valve, tighten the mounting bolts evenly to prevent distortion of the valve housing. Dirt or other foreign material on the mounting surface may also cause distortion.

Hydraulic cylinders are simple, ruggedly-built components and little can go wrong with them provided they are not overloaded. To insure efficient service, make periodical checks to detect internal or external leakage.

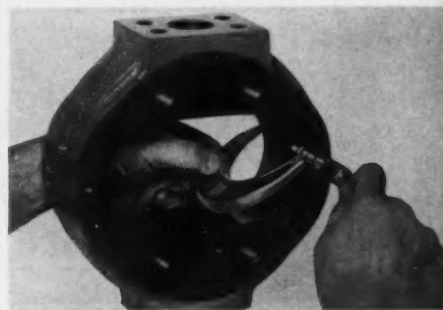
Check for external leakage around end caps and piston rod packing. Some packings are adjustable and can be tightened to eliminate leakage. If they are not adjustable, tighten end cap bolts or replace packings. Also check wiper rings for wear.

continued on page 188



GEARS (above)—Workman checks gear width, smooths gear faces before reassembly of pump so gears will mesh properly.

HOUSING (below)—Mechanic checks bore with calipers, smooths rough spots on gear housing end cover with India stone.



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CO-ORDINATED AIR POWER

For man-sized savings, take a look at your total air picture . . . Patchwork purchasing can give you too much and too little compressor equipment at the same time. You end up with many different, specialized types, old, inefficient units, too many sizes . . . maybe the "wrong" sizes, simply because they lack certain attachments. The result is a hodge-podge of equipment . . . which costs too much to run, takes too much manpower to handle, is too much to maintain.

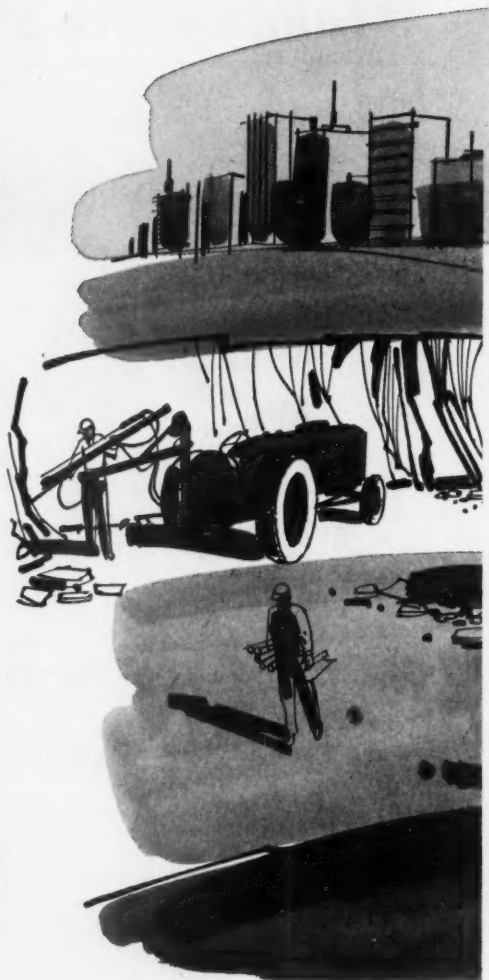
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It will pay you to consider a SCHRAMM task force of co-ordinated air-power equipment. The first SCHRAMM product you put to work will prove itself. With each additional SCHRAMM unit, you automatically schedule savings, pyramid profits.

Save as you buy . . . with the only complete line of co-ordinated air-power products in industry. Talk to your SCHRAMM dealer. Or write for the new booklet describing the advantages to you of co-ordinated Air Power. SCHRAMM, Inc., 604 North Garfield Ave., West Chester, Pa.

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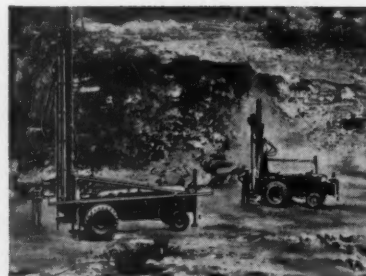
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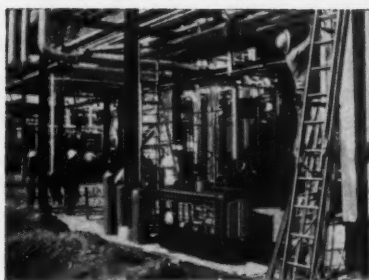
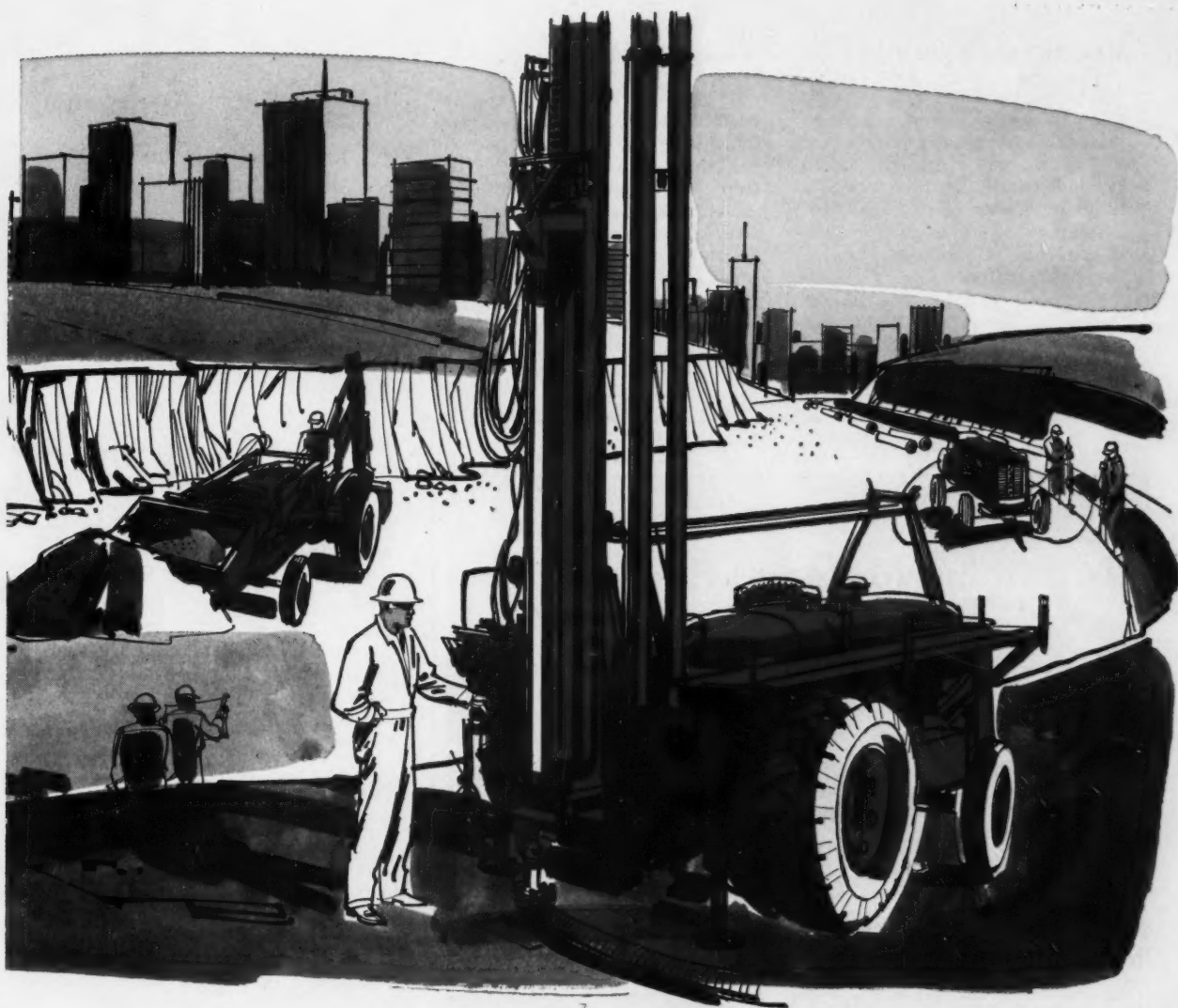
Portable Compressors save you up to 35% initial cost on 125 cfm compressors, comparable savings on every size from 20 cfm to 600. You also save 15 to 50% fuel consumption . . . get more air per unit of fuel. Air is hotter, you get more work per foot of air . . . tools operate at full capacity. Others use 40 gal. of oil to cool air. SCHRAMM uses none!



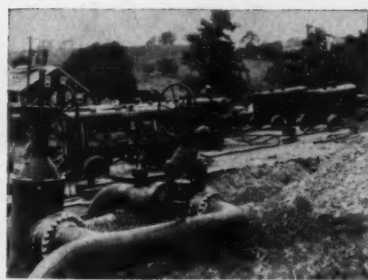
Pneumatractor Self-propelled Compressors cost less than comparable compressors and tractors combined! PNEUMATRACTORS drive along with work. No trucks, crews tied up. With STANDARD or MODEL 250 PNEUMATRACTOR, one man can break out concrete, tamp, drill, any job with air. With HEAVY PNEUMATRACTOR, same man can dig, grade, fill.



Rotadrill Rotary Drill Rigs cost less too. Air compressors are built into all models for fast, efficient chip removal. One man drills, changes steels, drives from hole to hole. Several models available: PNEUMATRACTOR-, truck-, crawler-mounted and do-it-yourself. Plus new Series "H" Hi-Pressure Rotadrills, for extremely hard-rock conditions.



Hi-Pressure Compressors are exclusive with SCHRAMM! Vital for jobs which require higher than normal pressures, such as testing small-diameter pipe lines. Units are dual purpose—can be used at normal pressures for regular work or at high pressures: 60 cfm at 500 psi; 200 cfm at 250 psi; 400 cfm at 250 psi! Available wheel or skid mounted.



Booster Compressors are the ideal package for the high-pressure, high-capacity air jobs such as major pipeline testing. Four basic units can be used individually or in combination to provide pressures ranging from 275 to 1500 psi, handling volumes from 600 to 1800 cfm. As with all Schramm equipment, you can buy or rent.



Construction Tools are mass produced to offer low initial cost for rock drills, breakers, clay spades, tampers and others. Combined with SCHRAMM Compressors, you get more air at the tool. More work is done. They provide faster operating speeds, lower up-keep costs, lower air consumption. All are made from drop forgings to give extra guts.

MAINTENANCE SHOP . . . continued from page 185

Internal leakage around seal rings results in loss of efficiency. Internal leakage can be caused by worn seal rings or scored cylinder walls. In rare cases, a bulged cylinder caused by overloading or shock loading results in internal oil slippage around the hoist piston.

Cylinders can be checked for bulges by laying a straight edge along the outside of the cylinder body. However, this method is

not always reliable. For more positive results, place a free piston ring in the cylinder bore. If the ring gap does not close at the step, the cylinder is bulged.

Loose or worn mounting pins will cause rapid packing wear and failure. Check mounting pins and brackets periodically and lubricate properly.

When disassembling and reassembling hydraulic cylinders, take special care to avoid dam-



END CAP—A fine file smooths end cap mounting to insure fit after reassembly.

aging the polished surfaces of the inner cylinders and piston rods. Keep sharp tools away from these surfaces, which should be protected at all times.

Pump Maintenance

The parts of a rebuilt hydraulic pump must operate within specific tolerances if the unit is to perform satisfactorily. All parts, such as gears, vanes, and housings, should be carefully measured before reassembly and replaced if they fail to meet specifications. Follow this general, step-by-step guide to restore a hydraulic pump to top working order:

- 1.—Replace all O-rings, oil seals, pocket seals and backup seals.
- 2.—Clean all parts thoroughly in a suitable solvent and dry completely with dry, filtered compressed air. (A word of caution—never dry or spin bearings with compressed air.)
- 3.—Inspect edges of gear faces in gear-type pumps and edges of vanes in vane-type pumps for scoring or roughness. Check for roughness or scoring of gear housings, housing end covers, and bearing carriers. Remove any roughness with a fine India stone.
- 4.—Check for excessive wear of gear hub bearing journals. Gears must be replaced in sets because they are made in sets. If either the gears or roller bearings show excessive wear, it is good

continued on page 190



PNEUMATIC-TIRED STACKERS IN LENGTHS UP TO 150 FEET

Reports of outstanding performance by the Kolman Model 101-R Radial Stacker are rolling in from all parts of the country. Owners are enthusiastic about bonus features offered by the Kolman Stacker — features like cable suspension of the boom, two-position wheels, balanced electric drive on the head section, power lift, power travel, and cam hinge. Sizes up to 150 feet long build larger stockpiles with a single setting.

MINIMUM SEGREGATION

Kolman's cable suspension design eliminates the segregation encountered with stackers having fixed discharge heights. By raising the stacker as the pile is built, the fall of material is kept at a minimum.

MAXIMUM PORTABILITY

Even the largest Kolman Stackers are on dual pneumatic tires that roll easily on any level surface. Wheel assemblies are mounted in quick-change frames to easily shift from radial arc position for stacking to parallel position for moving from one location to another in the stockpile area.

WRITE FOR LITERATURE

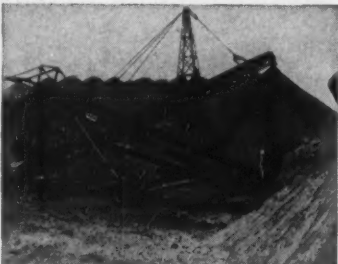
KOLMAN MANUFACTURING CO.

5900 West Twelfth Street Sioux Falls, S. D.

100'x24" Stacker is one of four Kolman Stackers used in the production of aggregate at Squaw Valley, California, in preparation of roads and site for the 1960 Winter Olympic Games. Stackers in the background are 70'x24".



150'x30" Stacker shown includes electric power lift and electric power travel for finger-tip control of stacker discharge position.



100'x24" Stacker in the background stockpiles sand produced with an 8'x48" double-deck vibrating screen on a Model 101 Kolman Portable Conveyor-Screen Plant.

Circle 188 on Reader Service Card



How to keep them out of the graveyard longer

Why do some engines die before their time? The answer could be in the lubricating oil you are using. Hundreds of documented case histories show that fleet owners have added up to 50% to the life of their engines . . . using RPM DELO Oil. Special compounding cleans and protects vital engine parts . . . reduces over all maintenance costs. In fact, many fleet owners say "RPM DELO" *is* preventive maintenance. Try it. Your equipment will be rolling for a long time to come.

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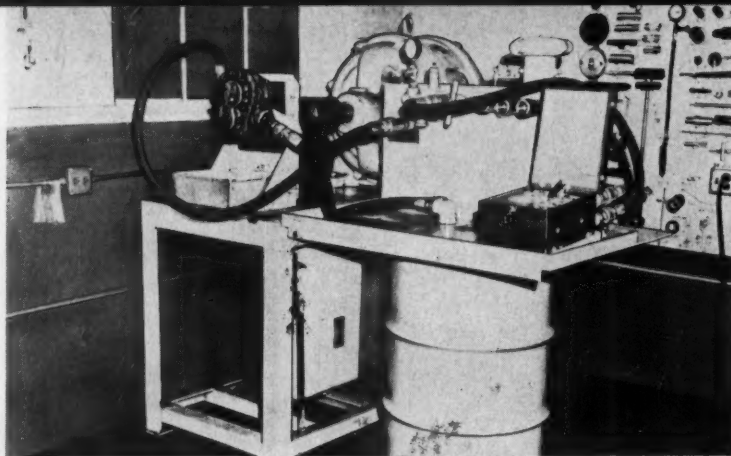
MAINTENANCE SHOP . . .

continued

practice to replace both the gears and the bearings. The gear housing, in most cases, also will have to be replaced. At any rate, check the gear housing bore dimensions for wear.

5.—Replace all wear plates that show erosion at the pressure relief grooves or excessive wear of their gear face surfaces.

6.—Reclean all reworked parts and dry thoroughly.



TEST BENCH—Pre-testing before installation checks rebuilt hydraulic components.



story of a man who saved \$4,000

He was thinking of buying Mobile FM Radio. Saw one of our ads—mailed the coupon and received a free paper model of the Aerotron Slimline. Then, slipped paper model under the dash of one of his vehicles—looked good—didn't take much space either. The Slimline is all-aluminum construction—weighs only 8 lbs. 11 ozs. Battery drain is no more than your parking lights use—has transistorized power supply, too. The hand wired circuitry is more reliable—easier to repair. Optional features include: up to three transmit and receive channels, and Unical,

for sharing crowded frequencies without interference. How did he save \$4,000? Bought 10 Slimlines at \$395 each—half the price of the other units he had considered. Moral? If you're thinking of buying Mobile FM Radio—clip this ad to your letterhead and we will send you a free paper model of the Aerotron Slimline.

AEROTRON

AERONAUTICAL ELECTRONICS, INC. • BOX 6527 • RALEIGH, N. C. • MAKERS OF FAMOUS 6N15 MODEL

7.—Reassemble the pump carefully, being sure to mesh gears properly in gear-type pumps, and install vanes for correct pump rotation in vane-type pumps. Measure shims carefully to insure proper wear plate clearance and tighten bolts to exact torque specifications. If the pump tolerances are properly met, the pump shaft can usually be turned by hand or with a small pair of pliers. If the shaft of the rebuilt pump cannot be turned in this manner, the pump clearances should be corrected before it is run-in to prevent serious damage.

Pre-Testing Is Important

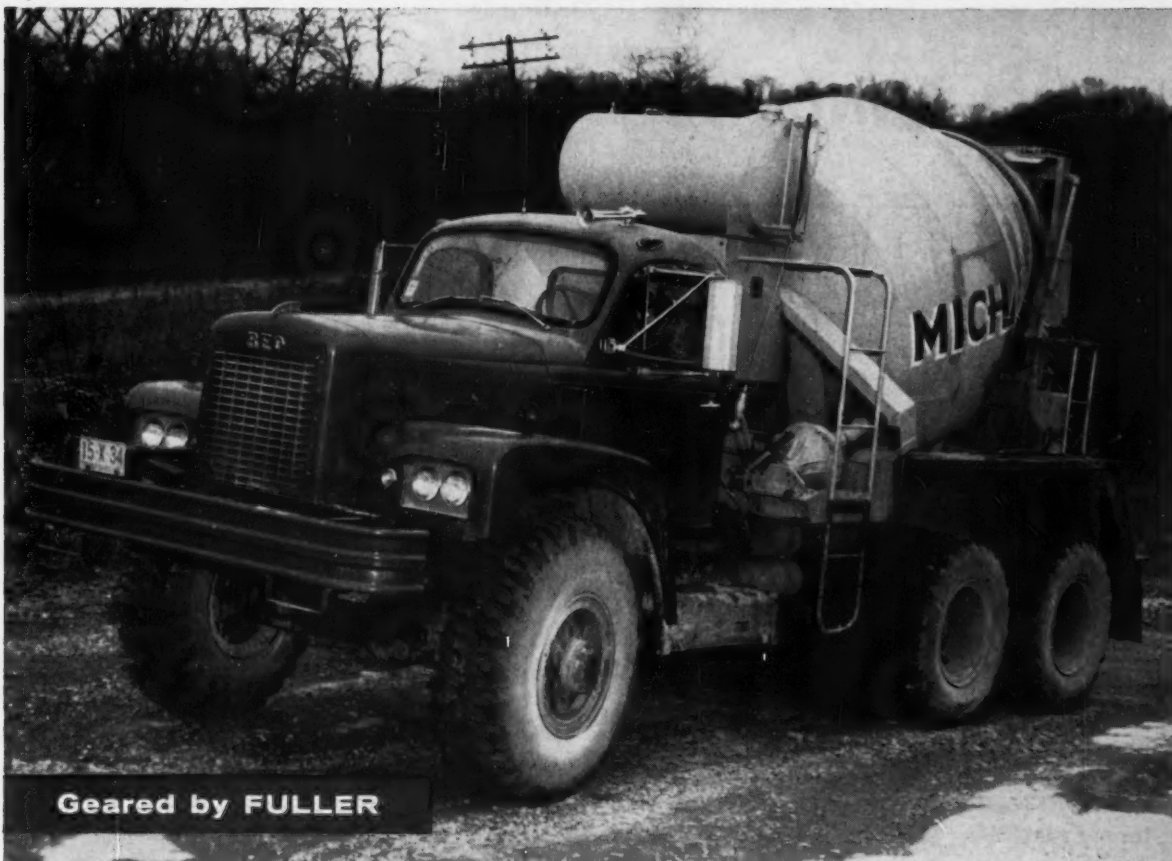
All rebuilt components—valves, cylinders and pumps—of a hydraulic system should be tested before they are returned to service. Pre-testing hydraulic components will avoid premature failure and insure correct operation after installation on the machine.

Rebuilt hydraulic components can be pre-tested at a test bench or tested after they are installed on the machine. It is much easier and more accurate to test components on a test bench (see photo) equipped with gages, a portable tester, and a barrel reservoir. The test bench can also be equipped with a header for quick connection of fittings.

When pre-testing pumps, first determine the rated capacity of the pump at various speeds so that test results can be compared with a standard.

These articles are based on a series on hydraulic system trouble shooting appearing in *Service Subjects*, a publication of the Euclid Div. of General Motors Corp.

Circle 190 on Reader Service Card



One of Michael's Fuller-equipped Reo F-505 6 x 6 OH Transit Trucks. The power is transmitted through a Fuller R-35 7-speed ROADRANGER to a 2.55:1/1.00:1 transfer case and 7.59:1 front and 7.54:1 rear axles.

R-35 ROADRANGERS from Pit to Patio

"We have more than doubled our business in the last three years," Vern Michael, owner of Michael Concrete Products, Inc., Loveland, Ohio, says. "Since we bought our first big Fuller-equipped Reo in 1957, our trucks always come through on deliveries. That Fuller R-35 ROADRANGER Transmission should be given a major portion of the credit for this performance. It has the get-up-and-go we need to get thru the rough construction sites where we operate."

Fuller R-35 RoadRanger features:

- No gear splitting — 7 selective and progressive gear ratios
- Easier, quicker shifts — closely spaced and equal ratios in the operating range
- One shift lever controls all 7 forward and 1 reverse speeds
- Engines work in peak hp range with greater fuel economy
- Compact transmission—only 375 lbs., 26-25/32 inches in length

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Gear	Std.*	Opt.**	% Step
Seventh	1.00	1.00	"33 24"
Sixth	1.33	1.24	34.8
Fifth	1.79	1.67	34.8
Fourth	2.42	2.25	36.5
Third	3.30	3.06	48.6
Second	4.90	4.55	67.3
First	8.20	7.62	
Reverse	7.63	7.09	

Weight . . . 375 lbs.

Oil Capacity . 16 pts.

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ANNOUNCES

WEATHERGARD

THE NEW, MORE DURABLE CONVEYOR BELT COVER

**Now makes superior Ozone Resistance a
Standard Feature of all U.S. Giant® Conveyor Belting**

United States Rubber Company has achieved its position as the leading authority in Conveyor Belting through the many "firsts" it has made in this field. Now **US** brings another major development to Conveyor Belting—the WEATHERGARD cover.

In recent tests, the new WeatherGard cover for Giant Conveyor Belting was subjected to seven times the ozone torture that causes ordinary belt covers to crack and, in turn, fail. The WeatherGard did not crack nor did it give any indication of cracking even after these exhaustive tests.

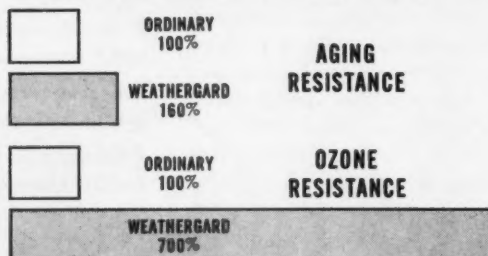
Further pointing out the toughness and durability of the WeatherGard were tests that showed it to have a substantially greater resistance to cracking from accelerated aging.

In addition, the WeatherGard cover resists damage from smog, sunlight, and weather checking. And... besides protecting against these factors that cause ordinary belts to fail, U.S. Giant with its WeatherGard cover is abrasion and wear resistant.

*The new WeatherGard cover is standard on all U.S. Giant Conveyor Belting at no extra cost. See your **US** Representative or Distributor.*



COMPARE THE RESULTS OF TESTS BETWEEN WEATHERGARD AND ORDINARY BELTING



WORLD'S LARGEST MANUFACTURER
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Construction Methods AND EQUIPMENT

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Methods Memo...



Before... ... and After

Just a few hours before this embankment collapsed, a CM&E correspondent visited the site and took the photo at the top. He thought the project might make an interesting job story for Construction Methods. Next day he was called back to get the photo shown above.

Previously undetected pockets of pulverized material were blamed for the cave-in at the site of Seattle's new City Hall. The collapse sent tons of fissured clay into an area to be occupied by a four-level municipal parking garage.

The 35-ft-high bank was restrained by a tie-back system consisting of expanding anchors in 8-in.-dia holes drilled 12 to 20 ft into the embankment. The anchors had been load tested to 10 tons each. The bank was covered with wire mesh and gunited, and then the contractor installed 4x12-in. timber strongbacks in 10x15-ft grids. It didn't hold.

Not Quite a Smashing Success

Helicopters have proved their worth as a specialized piece of construction equipment, but here's one job where they failed to come through.

A subcontractor decided to rent a copter to place 3x8-ft panels of thermopane glass in a 75-ft high control tower at Seattle's Boeing Field. The whirly-bird smoothly picked up the first 585-lb package of glass, but high winds caught the flat surface of the pane and the trouble started.

The wind endangered the helicopter by twisting lift lines. The pilot set the package down quickly to save the machine, literally and figuratively shattering any hopes of airlifting the remaining panes. A crane was called in to lift the other panels into place. It will take 90 days to replace the broken panels.

Off to the Peace Corps

Last month CM&E Assistant Editor Gene Schreiber joined a group of 40 young men who are now in training at Texas Western College in El Paso for the first Peace Corps mission. After the eight-week training period, 28 of the aspirants will be selected to go to Tanganyika. Their assignment: surveying for farm-to-market roads and assisting in road construction and geological mapping.

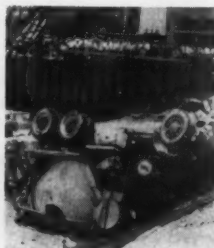
Contractors Get On-the-Spot Service

Three of Cleveland's leading suppliers of building materials have purchased portable batch plants and are now offering contractors on-the-job service.

The largest of the three suppliers has a trio of mobile batch plants in operation. They wheel a plant directly to the job site and set it up in a few hours. Fast on-the-spot service enables the suppliers to compete for new business.

The newest mobile batch plant in the area is an Erie Strayer unit consisting of a TPC cement silo and batcher and a TPA aggregate bin and batcher. The plant now is supplying some 10,000 yd of concrete for a 3-mi-long highway widening project.

Good to the Last Drop



No, the Picture of the Month on p. 61 does not show a new way to pour concrete. An American truck crane is rescuing the truck mixer after it overturned on an earth fill ramp at the site of a bank building in Florida.



Construction Methods AND EQUIPMENT

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CONCRETE MIXING AND PLACING ... 50¢

- R2** An 88-page booklet containing a series of articles on the fundamental principles of concreting for all types of structures. Subjects include: concreting equipment selection, application, and maintenance; production factors; form planning, design, and construction; design and control of concrete mixes; handling and placing concrete; underwater concreting.

PRESTRESSED CONCRETE ... 50¢

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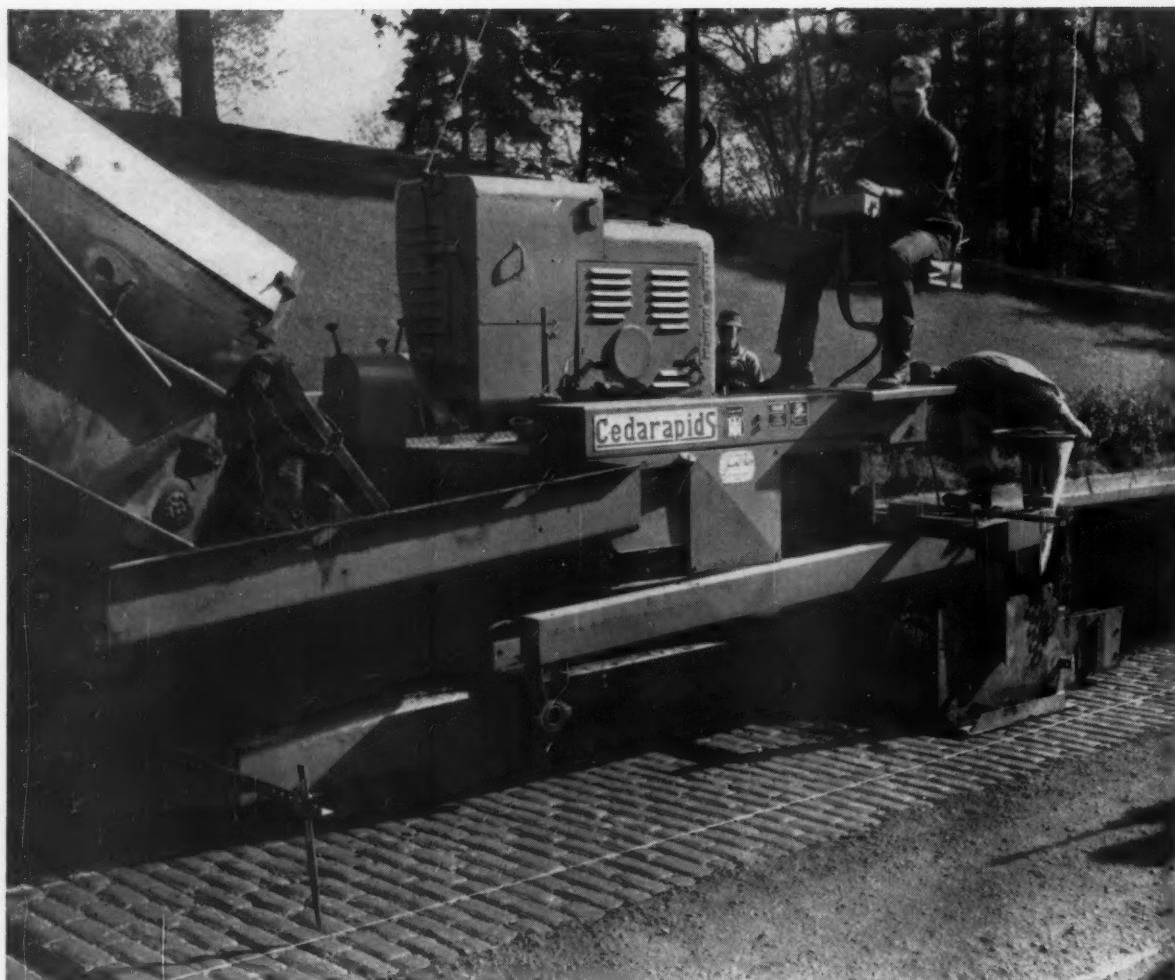
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